Microsoft sprawl The software giant dives into CRM and separately acquires key conferencing technology. PAGE 14.

Wireless armada To reduce costs, the U.S. Navy is outfitting its ships with wireless LANs. PAGE 21.

NetworkWorld

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January 27, 2003 ■ Volume 20, Number 4

Find out how Cisco's Bill Rossi plans to grab $1 billion out of thin air. Page 12.

IP storage standard set to roll

■ BY DENI CONNOR

MONTEREY, CALIF. — The long-delayed iSCSI standard is set to gain Internet Engineering Task Force approval within weeks, which means it's "put up or shut up" time for vendors that have cited its incompleteness as justification for failing to support the IP storage specification in their arrays.

Despite a flurry of iSCSI-related activity by secondary players last week, the wholesale deployment of next-generation storage technology will remain dampened until system vendors such as EMC and HP implement iSCSI-enabled

See iSCSI, page 20

App performance in show spotlight

■ BY DENISE DUBIE AND TIM GREENE

A handful of vendors are scheduled to air products this week designed to give companies a better read on application performance by aggregating network and system management data.

BMC Software, Compuware, NetScout and newcomer Ipsum Networks are among the vendors responding to customers who are increasingly focused on business impact management — that is, the idea of paying more attention to overall application performance than to the assorted piece parts of a network. Many of the products will be introduced at the ComNet Conference & Expo in Washington, D.C.

"The whole orientation has changed in the past few years," says Frank Petersmark, vice president of IT and CIO at Amerisure Mutual Insurance, a Farmington Hills, Mich., company with a network of about 700 managed nodes across 10 locations.

"Everything we do is from an application perspective. Infrastructure is ... not the thing running the business. The real juice is in the applications," he says.

Mark Ehr, a senior analyst with Enterprise Management Associates, says he has heard similar sentiments from his clients.

"Companies understand now that spotting application problems early will help the bottom line, and they need easier ways to do it," he says.

Compuware will try to do its part by releasing a more comprehensive and scalable version of its Vantage network, server and application monitoring software.

See ComNet, page 78

COMNET

Inside:
Start-up Celite Systems and established enterprise vendors such as Foundry are set to roll out net gear at the show. Page 78

Online:
Go to Network World Fusion for show previews, news and multimedia coverage from the show floor.

DocFinder: 4129

Users want Lotus to lift the fog

■ BY JOHN FONTANA

ORLANDO — Lotus' Domino customers and business partners want a clear explanation of the product's future and how it ultimately will be integrated with IBM's application server and database, and they want specific directions at this week's annual Lotusphere conference.

Users say IBM's picture of a world that includes both the familiar Domino and the next-generation model that fits IBM's portal strategy still creates uncertainty as to why and how the platforms will merge, and they are concerned that Domino will be gutted to supply piece parts for IBM's WebSphere Application Server, the cornerstone of Big Blue's middleware.

The uncertainty will be fueled by the top announcements at Lotusphere, many of which revolve around WebSphere. They include new development tools, an e-mail-only server module and a calendar component that plugs into the WebSphere application server and uses DB2 as a data

See Lotus, page 18

VoIP Tips from the trenches

Battle-tested pointers for voice-enabling your data network. Page 48

"That won't bring the

Anything can happen to your infrastructure. Make sure it's reliable. When it comes to your mission-critical enterprise applications, downtime is not an option. Yet maintaining the uptime you need is difficult when there are so many variables that can affect system availability. In this world where _____ can happen at any moment, it is of the utmost importance that you have the people, processes, and technology in place to make sure your infrastructure is ready for anything, and can deliver the reliability your business requires. Here's how the Microsoft® platform can help you get there:

Technology

Reliable systems start with reliable server software and rock-solid hardware. Microsoft has joined with leaders in the high-availability segment, such as Stratus Computer, to deliver fault-tolerant software and hardware configurations for mission-critical computing with up to 99.999% availability. Today, Windows-based fault-tolerant solutions support banks, public safety operations (911 phone systems), health care systems, and other organizations which require the highest level of reliability.

In addition, Microsoft has partnered with leading server OEMs, network equipment vendors, and ISVs to deliver the Microsoft Systems Architecture (MSA) program. MSA provides prescriptive guidance for configuring a data center caliber server infrastructure that is optimized for Windows and has been lab-implemented, partner-integrated, and pretested. Ultimately, MSA is designed to give you high-availability systems, networking, and storage with faster implementation, predictable costs, and reduced risk.

The Microsoft Windows 2000 Server family also offers two important reliability-enhancing features: Cluster Service and Network Load Balancing. With Cluster Service, if one server stops functioning its workload is automatically transferred to the other server, avoiding any downtime. Network Load Balancing works by spreading incoming client requests among a number of servers linked together to support a particular application, so no matter how many requests are received the server is always available.

servers down, will it?”

People and process

Technology cannot do it alone. Getting the highest level of availability from any operating system, including Windows, requires an IT environment built around sound operating guidelines and staffed by well-trained employees. To help you build such an environment, Microsoft and a broad range of third-party partners offer a collection of training and support programs. One excellent example of such a program is the Microsoft Operations Framework (MOF) which is an operational guidance suite that provides you with technical guidance for helping achieve mission-critical system reliability, availability, manageability, and security on Microsoft products and technologies. To help you find the best people, Microsoft certification programs identify individuals and service providers with the expertise you need to help get the system availability your organization requires.

“The reliability of our 911 computer-aided dispatch system supports our ability to effectively save lives. The fault-tolerance provided by Stratus’ ftServer running Microsoft Windows 2000 Advanced Server provides the near 100 percent reliability and availability we need for a system where seconds can be of critical importance.”

—Deputy Chief Tracy Jarman,
San Diego Fire & Life Safety Services

white papers, webcasts, and other information that can help you get your infrastructure reliable enough to handle _____, visit microsoft.com/enterprise/reliability Software for the Agile Business.


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1/27/03

NetworkWorld

News

■ **10 Mergers and acquisitions** slow, but steady, in 2002.

■ **10** Users tout **Linux** savings.

■ **12 Sprint** is rolling out IP alternatives for legacy customers.

■ **12 Cisco** betting big on **wireless LANs.**

■ **14 PlaceWare** purchase nets **Microsoft** conferencing stake.

■ **14 Microsoft** delivers long-awaited **CRM software.**

■ **18 ISS** centralizes security management.

■ **78 Cut-rate DSL** on the way?

Infrastructure

■ **21** Navy set to navigate with wireless LANs.

■ **21** NFL Films brings VoIP to the Super Bowl.

■ **22** Tivoli vice president talks storage.

■ **24 Dave Kearns:** You can fool some of the people . . .

■ **26 Special Focus:** Grid vendors target corporate apps.

Enterprise Applications

■ **29** Spam: New year, same old story.

■ **29** Patently prolific. IBM secured more patents than any other company in 2002.

■ **30** Microsoft enhances productivity applications.

■ **30 Scott Bradner:** Discussing the truth.

Service Providers

■ **33** WorldCom touts real-time applications monitoring.

■ **33** Metromedia serves up high-speed 'Net plan.

■ **34 Johna Till Johnson:** How to place a dollar value on technology.

The Edge

■ **37** Laurel Networks unveils demand-creation plan.

■ **37** NextHop Technologies updates router software.

Technology Update

■ **41** Embedded switching adds reliability.

■ **41 Steve Blass:** Ask Dr. Internet.

■ **44 Mark Gibbs:** Your thoughts and MP3 tools.

■ **44 Keith Shaw:** Two quick peeks at cool stuff.

Opinions

■ **46 Editorial:** Managed service myths.

■ **47 Ira Brodsky:** Scale grid computing down to size.

■ **47 Howard Anderson:** Self-abuse: Talking to myself.

■ **80 BackSpin:** The educational interface.

■ **80 'Net Buzz:** Is airborne broadband service a flight of fancy?

Management Strategies

■ **59** Fact-finding mission: Ask lots of questions to squeeze the air from inflated resumés and uncover false claims.

NetGear puts a cable modem, four-port router and wireless access port into one box.

Page 44

Features

Feature: VoIP tips from the trenches. Avoid the pitfalls and prep your network. We've got advice based on our VoIP testing. **Page 48.**

Top ISP Report: New format! Backbone data that shows which ISPs are performing best. **Page 55.**

Review: Opnet IT Guru 9.0 helps you test new applications' impact on the network before you deploy. **Page 57.**

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Interactive

Start-ups to watch

Know of a hot network newbie that could shake up the network world? Nominate it for *Network World's* 2003 10 Start-ups To Watch Award. We profile these companies in our annual Network World 200 Issue, a Signature Series edition that publishes in April, and track their performance throughout the year. The deadline for nominations is Jan. 31.
DocFinder: 3933

ComNet 2003 Show Planner

Heading to D.C. this week? Check out our unabridged ComNet 2003 Show Planner for the keynote addresses, events, tutorials and discussions you won't want to miss.
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Seminars and Events

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Columnists

Compendium

Thoughts on wireless TCO
Fusion Executive Editor Adam Gaffin passes along an analysis on the true total cost of ownership of wireless LANs. Sometimes a WLAN is worthless without sinking money into other parts of your network.
DocFinder: 4041

Telework Beat

HomePlug poised to ride Wi-Fi's coattails
Net.Worker Managing Editor Toni Kistner says big names are buying into power line as a wireless extension.
DocFinder: 4042

Small Business Tech

Safe and sound computing
Columnist James Gaskin offers keen advice and free products to combat viruses and intrusions. **DocFinder: 4043**

View from The Edge

Nokia darkens Amber
The Edge Managing Editor Jim Duffy notices that Nokia is playing router switch-a-roo again, as another edge router bites the dust. **DocFinder: 4044**

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News Bits

TheGoodTheBadTheUgly

Leave it to the feds. The federal government's CIO last week gave the IT industry 59 billion reasons for optimism with his proposal for a $59 billion technology budget for fiscal 2004. A big chunk of the proposed budget — which is roughly 12% higher than the current one — would go toward homeland security projects. ➤

Crescent eclipsed. Crescent Networks, a company that started in 1999 and developed virtual routing technology for carriers, recently became the latest service provider supplier to shut down. The company, for which $66 million in funding proved to be not enough to survive the telecom industry meltdown, has been reduced to selling off its intellectual property at ip@crescentnetworks.com.

Raytheon drops a bomb. Defense contractor Raytheon is suing Oracle, Brocade, Veritas software and five other companies alleging that they misused Raytheon's patented technology for mass data storage. The suit centers around a patent Raytheon says was issued in 1993 to E-Systems, which Raytheon owns. Raytheon wants the other companies to stop selling products that allegedly infringe on its patent and to pay the company for past use.

Cisco files suit against Huawei

■ Cisco has filed a lawsuit against Chinese network equipment maker Huawei Technologies and its subsidiaries, claiming unlawful copying of Cisco's intellectual property. Huawei has emerged recently as a significant low-cost competitor to Cisco. Filed in the U.S. District Court for the Eastern District of Texas, the suit alleges that Huawei unlawfully copied and misappropriated Cisco's IOS software, including source code, copied Cisco documentation and other copyrighted materials, and infringed numerous Cisco patents. Huawei said it is consulting with legal advisers to resolve the matter, and does not have any comment at this time.

Cisco snaps up Okena

■ Cisco last week moved to strengthen its position as a network security software provider by acquiring privately held Okena for $154 million in Cisco stock. Okena makes the StormWatch intrusion-detection software. Marketed as an "intrusion-prevention" program, StormWatch uses intelligent agents running on user desktops and servers to monitor those systems. The program intercepts and approves or rejects a resource request from an application to the operating system based on a customer's application security policy, for example.

Gates: 'Trustworthy Computing' on track

■ Microsoft has made progress on its "Trustworthy Computing" promise, but more needs to be done, Bill Gates wrote in an e-mail made public last week. "While we've accomplished a lot in the past year, there is still more to do — at Microsoft and across our industry," Gates wrote. The assessment comes a year after Gates announced the Trustworthy Computing initiative, a Microsoftwide focus on securing its products. As part of that initiative, Microsoft halted the development work of thousands of software engineers for 10 weeks to train them to look at software as hackers do. Microsoft created new product design methodologies, coding practices, test procedures, incident handling and support processes to improve the security of its products, according to Gates. Microsoft spent about $200 million on improving Windows security, he wrote.

AT&T reports disappointing earnings

■ It looks as though AT&T isn't winning as much business from WorldCom as some had expected while the latter struggles through bankruptcy reorganization. AT&T announced its fourth-quarter and year-end financial results last week. While revenue was in line with analysts' predictions, AT&T's lower-than-expected results on its business-services side of the house surprised most. The carrier saw its business-services revenue fall 3% in the fourth quarter to $6.6 billion. Business services revenue fell 4.1% for the year to $26.6 billion. Overall, revenue for AT&T last year was $37.8 billion, a drop from $42.2 billion in 2001.

XO sets out anew after bankruptcy

■ Competitive telecom provider XO Communications has emerged from Chapter 11 bankruptcy having reduced its debt from more than $5 billion to a more manageable $500 million. Billionaire financier Carl Icahn controls the restructured company and is the chairman of the board. XO filed for Chapter 11 in June. Under the company's original restructuring plan, investment firm Forstmann Little and Mexican telecom firm Telefonos de Mexico were set to invest $800 million in the bankrupt provider in return for a 39% stake each. Forstmann and Telefonos ultimately decided to not pursue their restructuring plan, leaving the door open for Icahn.

COMPENDIUM

TV for the computer-illiterate

Diego Doval has been forever turned off by the TV series "CSI" because of a scene in which the crime-labbers check out a victim's e-mail: "This e-mail has seven originating computer addresses. Probably a computer network. . . . Then some kind of window magically pops up in the middle of what's arguably America Online, running on a PowerMac, with a Windows interface."

Read more at www.nwfusion.com, DocFinder: 4045.

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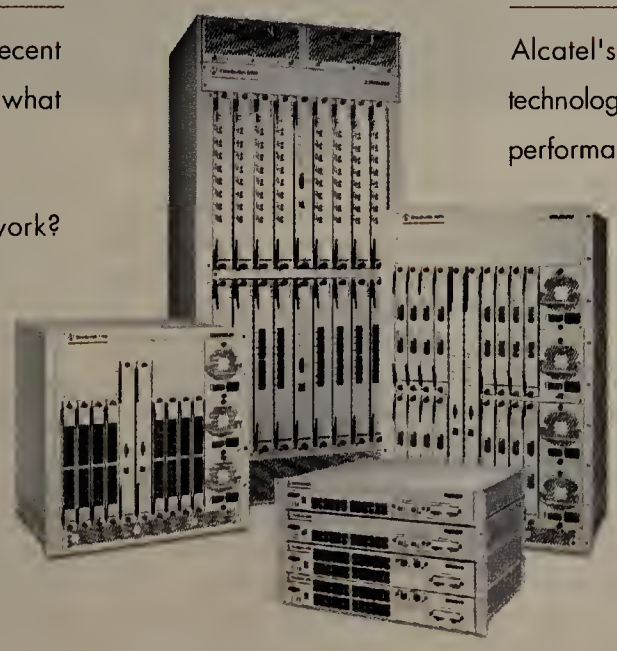

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M&A slow in 2002

Activity could pick up slightly in 2003.

■ BY MICHAEL MARTIN

Merger and acquisition activity is unlikely to increase substantially this year, experts say, although large companies will continue to seek out niche targets that can help them round out their wares and present users with single-package products and services.

"Customers want all-in-one products," says Kurt Jaggers, a managing director with investment firm TA Associates. "They don't want to deal with a variety of vendors. So there are some large buyers out there."

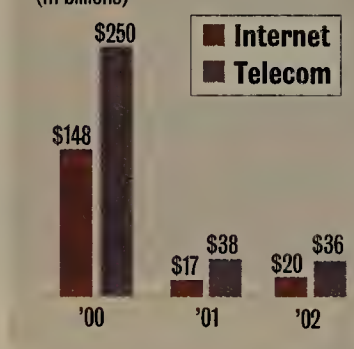
At the end of 2002, some large software outfits went on a bit of a buying spurt:

- IBM picked up Rational Software, a producer of development tools, for $2.1 billion.

M&A meanders

Merger and acquisition activity remains slow.

(In billions)



SOURCE: MERGERSTAT

- Yahoo spent $235 million on search-engine firm Inktomi.
- Veritas Software acquired Precise Software Solutions, an application-performance management company for $537 million.

However, December's M&A flurry wasn't characteristic of the rest of the year. According to Mergerstat, a company that gathers information on the M&A market, telecom mergers slipped to $36.4 billion in 2002 from $38 billion in 2001. Internet deals rose slightly from $17 billion in 2001 to $20.7 billion in 2002. Both years are a far cry from 2000, when companies spent $148 billion on Internet deals and $250 billion on telecom purchases.

Part of the reason for the low M&A dollar totals is that stock market valuations are way down from their highs of 1999 and 2000. So even though some companies are buying, the value of the deals is considerably lower than it would have been in 2000.

Another reason for the slow 2002 market is that investors were encouraging companies to show free-cash flow, says Judy Reed Smith, CEO of Atlantic-ACM, a telecom consulting firm. Most of the deals tended to be small.

"We had a very strong property we were offering for sale — a healthy, profitable long-distance company," Reed Smith says. "The problem was, people were only looking for bargains in 2002."

Some companies sold pieces of their networks that didn't fit into their long-range plans, she says. Verizon sold many of the small, rural portions of its GTE network to local, rural incumbent carriers.

The tech sector might see an increase in M&A this year, Reed Smith says.

"Wall Street is wondering why these companies are sitting on that free-cash flow," she says. "Investors are saying it's time to do something with the money."

However, it's also possible that companies might continue to sit on their free cash until they see if a Bush administration proposal to eliminate taxes on dividends creates pressure from investors to declare large dividends, Reed Smith says.

If there is a big telecom deal this year, Reed Smith expects it to be in the wireless market.

"If you look at someone like Sprint PCS with its low stock price, it could be a nice buy for someone," Reed Smith says.

Changes in telecom regulation also could help drive the market. If the government changes the rules about unbundled network element-platforms, as expected, many providers that rely on UNE-P could be pressured to sell, Reed Smith says.

Paul Hammer, senior vice president at investment firm Houlihan Lokey Howard & Zukin, says large companies in the government services sector could shop for bargains this year. "It's not considered the hottest area, but government services spending has remained very stable," he says.

TA Associates' Jagger says he thinks most M&A activity this year will be driven by companies such as Microsoft, Oracle and IBM, which continue to look for smaller companies providing a service or product that the large companies consider to be bargains. ■

Users tout Linux savings

■ BY PHIL HOCHMUTH

NEW YORK — Out with the old — as in Unix — and in with the new — Linux — was the mantra last week at the LinuxWorld Expo. Executives from Wall Street, the U.S. government and the Fortune 500 talked up open source software as a cost-cutting tool for corporate networks.

LinuxWorld drew more than 17,000 attendees and 150 exhibitors — both increases over last year, as estimated by show organizer IDG World Expo, a sister company of *Network World*. And with the show's midtown Manhattan venue, the use of Linux in Wall Street IT shops was a major theme at the show, reinforced by a keynote address from Jeffrey Birnbaum, managing director and global head of enterprise computing in Morgan Stanley's institutional securities division.

Open source savings

Organizations with more than 1,000 users could save 44% by running Intel-based Linux servers instead of RISC-based Unix boxes for certain applications.

SOURCE: IDC

"We are in an arms race for adding computer power," Birnbaum said. "That means adding new hardware and applications all the time."

To keep up this pace while keeping down costs, Birnbaum said his firm decided to look into Intel servers and Linux software. By 2005, Morgan Stanley expects to be running 80% of its systems on commodity hardware, running a mix of Linux, Windows and Unix.

Another veteran of the Wall Street IT "arms race" praised Linux as a flexible development tool and a cost-reducing tool.

"The great thing about Linux is that you can use real [total cost of ownership] as the selling point to get your organization to buy into something that also lets us do innovative things," said Evan Bauer, an independent software consultant and former CTO at Credit Suisse First Boston (CSFB). Speaking on a panel of Wall Street IT executives, Bauer described his involvement in porting one of CSFB's trading applications from Unix to Linux. While the company realized savings of more than 80% by running Linux, Bauer said, the open source nature of the software let CSFB developers tinker and tune the operating system and applications to boost performance as well.

Before the switch, the company's trading desk was losing millions of dollars in missed trades, Bauer said. But after the infrastructure change CSFB "could take on more business because our trade flow was increased."

In addition to the Linux cheerleaders on Wall Street, IT executives from government and private sector firms discussed Linux as the logical successor to aging Unix systems.

The Naval Oceanographic Office (NAVOCEANO) of the Navy recently replaced proprietary Unix servers with Linux on some of its ships that collect data on weather patterns and other oceanographic measurements.

While Linux is still in the minority at NAVOCEANO, said John Lever, the organization's CIO, the replacement of proprietary hardware and software with Intel and Linux resulted in a 10-to-1 cost reduction.

While Unix-to-Linux migration was a hot topic at the show, some IT executives with big Linux plans said they were not quite ready to dump their Unix boxes for Linux — yet.

"We're waiting for Version 2.6 of the kernel to appear to go further in the data center," said Colin Hope-Murray, CTO at the personal care conglomerate Unilever, which uses Linux for Web servers and other edge applications. Hope-Murray, who foresees Linux being in the data center "over the next eight to 10 years," said he would like to see more high-end features in the software, such as better multithreading support, which would let Linux applications run faster for more attached clients.

Meanwhile, many software vendors used LinuxWorld to jump on the open source bandwagon with offerings to help Linux users manage their environments.

Computer Associates announced 12 new Linux offerings including Unicenter Management for WebSphere on Linux, Unicenter Management Portal, eTrust Web Access Control and CleverPath Aion Business Rules Expert. From its storage product line, it also released BrightStor ARCserve Backup agents for Apache and MySQL. CA also announced the formation of its Linux Technology Group, aimed at developing and marketing the company's 60-plus Linux products, which it has developed since 1999.

Also on the management front was a new version of Ximian's Red Carpet Enterprise software for distributing Linux software updates and configuration changes to large amounts of Linux nodes on a LAN or across a WAN.

The petroleum company Amerada Hess of Houston needed a tool for managing its 350-node Linux cluster for its oil exploration research applications. The firm first tried to create its own patchwork system of homegrown applications and automation scripts, but ended up turning to Ximian's Red Carpet product.

Where's the penguin?

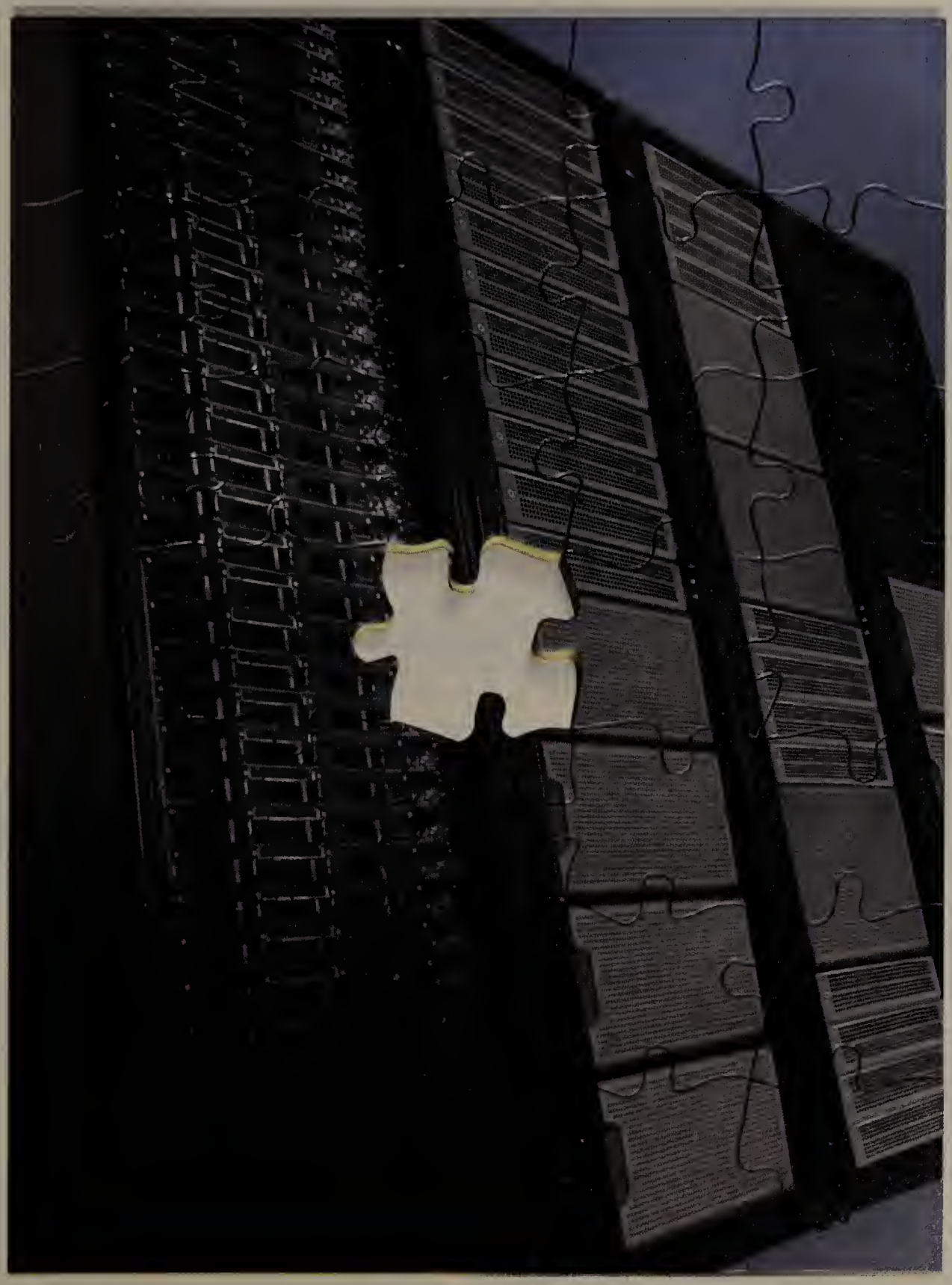
While observers say Linux is the fastest-growing operating system, a poll of *Network World* readers shows that 48% of companies have it installed, while 74% have Unix and 94% use Windows.

SOURCE: NETWORK WORLD 500 SURVEY

After the cluster was brought online, "it started to become an issue of how to get updates to all the servers," said Jeff Davis, systems programmer at Hess.

Davis runs Red Carpet on a server on Hess' LAN, which stores software patches and updates and automatically downloads the packages. ■

It always happens with the last piece...



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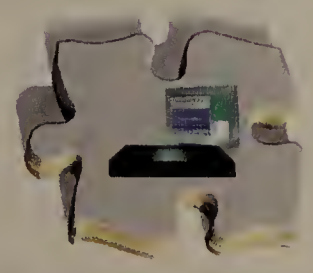

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The Power of Being There

Sprint to roll out IP migration options

BY DENISE PAPPALARDO

KANSAS CITY — Sprint intends to introduce three services this week that it says will offer frame relay and private-line customers a smoother, less-expensive migration path to IP.

SprintLink Frame Relay, SprintLink Packet Private Line and SprintLink Virtual LAN Service let customers keep their existing gear and local connections yet migrate traffic to the carrier's IP backbone.

Sprint has upgraded its SprintLink IP network to support a Cisco technology called Layer 2 Tunneling Protocol Version 3 (L2TPv3). The technology lets a carrier encapsulate Layer 2 traffic, such as frame relay, for transport over a Layer 3 network.

SprintLink Frame Relay lets customers slowly migrate to IP without changing the look or feel of their networks, while also lowering their monthly service rates.

"On average customers will see a 20% to 30% cost savings compared to traditional frame relay because [the service] is supported over our IP network," says Pete Parish, director of product marketing at Sprint. "We wanted to offer customers an incentive to migrate to IP."

Sprint soon will deploy its SprintLink Frame Relay service for Burlington Resources.

"We had specific bandwidth needs where we needed multiple T-3s," says Chris Farr, telecom supervisor at the Houston oil and gas company. Sprint's service is a cost-effective way to connect Burlington's international office with its domestic network, he says.

Sprint's L2TPv3 offerings compete with AT&T's IP Enabled Frame service and WorldCom's Private IP service.

"This is really an alternative to [Multi-protocol Label Switching (MPLS)]-IP-enabled services," says David Willis, an analyst at Meta Group. However, the difference is that Sprint's is a site-to-site service, not a fully meshed offering, he says.

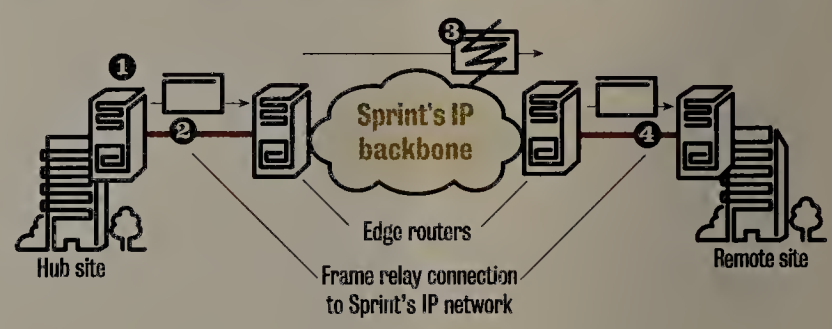
Sprint does offer a fully meshed alternative — its IP Intelligent Frame Relay service — but this is based on virtual routing technology from Nortel, not MPLS.

That the new service is not fully meshed is a plus for some users, Parish says. SprintLink Frame Relay is as secure as a traditional frame network because a tunnel, which acts like a permanent virtual circuit, is established between two sites on the network, he says. The encapsulated frame traffic that's transported via a L2TPv3 tunnel is less vulnerable than if it were carried across the Sprint's backbone from router to router, he says.

See Sprint, page 20

Sprint's next-generation frame relay

SprintLink Frame Relay offers users a migration path to IP.



1. Customers use the same frame relay devices at their sites to connect to the SprintLink IP network.
2. The frame relay link connects to a Cisco edge router that supports L2TPv3. The user's frame relay permanent virtual circuit is mapped to an L2TPv3 tunnel.
3. Layer 2 frame traffic is encapsulated and transported over Sprint's Layer 3 network.
4. Traffic is sent to a specific edge router and transported over another frame relay link before it hits a customer's remote device.

Q A Cisco betting big on wireless LANs

Cisco has a lot riding on Bill Rossi. One billion dollars to be exact. Rossi, who runs Cisco's wireless network business unit, says the billion dollars refers to how much revenue Cisco hopes to be pulling in annually from this market in three to five years. The company, which got into wireless LANs through its acquisition of Aironet about three years ago, owns roughly one-third of the market. Rossi recently spoke with Network World *Senior Editor John Cox about Cisco's plans.*

One billion dollars translates into a lot of wireless access points. How will you do it?

Wireless LANs will be standard network technology for every country, and we see major productivity enhancements with these nets. At Cisco, we all have wireless notebooks, and we spend a lot of time moving around meeting with each other and traveling, or working from home. Being able to use your computer and computing resources away from your primary workspace becomes indispensable. Wireless will be part of every network design, just like a router or a switch is today.

But wireless completely lacks the management tools that are routine in wired nets.

This is really a new area in the enterprise environment. One big problem is there are lots of devices. And in a wireless LAN, they're all separate elements. Each one has to be changed, configured, managed. There are not a lot of tools available to do this today. We have our Wireless LAN Solutions Engine, which scales to manage about 500 devices. We're looking at scaling this even more. We're also working with partners like Wavelink, which has a set of management tools, and AirMagnet, which has site survey tools.

But the real management problem is 'How do I get control of the [radio frequency] domain?' This is unique with wireless. Is the access point transmitting? Are the client devices working? Is there interference in the area? And then being able to take action on all that. Existing management products developed for the wired net can't be readily adapted to [radio frequency] management.

So how does Cisco propose to solve this?

Our vision is to make wireless nets structured. In wired nets, you had a way to manage it and a cookie-cutter way to deploy it, for example, with wiring closets and 100-foot cable runs. Today, wireless is just "strewn around" like early Ethernets were. This [structured approach] is also the way to deploy and manage wireless LANs.

Any more details?

Watch this space.

You make it sound simple, but there are a number of reasons why large-scale wireless LANs in the enterprise are rare.

The main obstacle has been security. That's what has prevented a lot of enterprise companies from deploying wireless. [But] you can deploy secure wireless LANs today.

The key remaining issue is how to get a truly interoperable security solution that works across [different] clients and devices. It's not going to be a one-vendor solution. [It will happen] when security truly becomes a standard, when it's well-defined and well-tested.

And until then?

We've been working with key partners to license our enterprise security suite. We offer an open, free licensing scheme. [Wi-Fi chipmakers] Atheros and Intersil have licensed it and then create reference designs that show you how to build, for example, a PC card for a laptop. We are part of these reference designs.

Won't the fact that 802.11b has only three nonoverlapping radio channels limit dense enterprise deployment?

It will be. Today, with wireless being deployed as an overlay on wired enterprise nets, they're not taxing wireless performance. But capacity will be a problem as you also run voice over wireless. Eventually, with adapter cards that can support all three wireless LAN standards, 802.11b, 802.11a and 802.11g, you'll have lots of capacity. You can start then to think about pure wireless networks. But that's in the future. ■

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THE POSSIBILITIES ARE INFINITE

Buy helps Microsoft's real-time plans

■ BY JOHN FONTANA

Microsoft last week made a serious move to boost its development of a real-time communications platform and lead a major shake-up of the conferencing market.

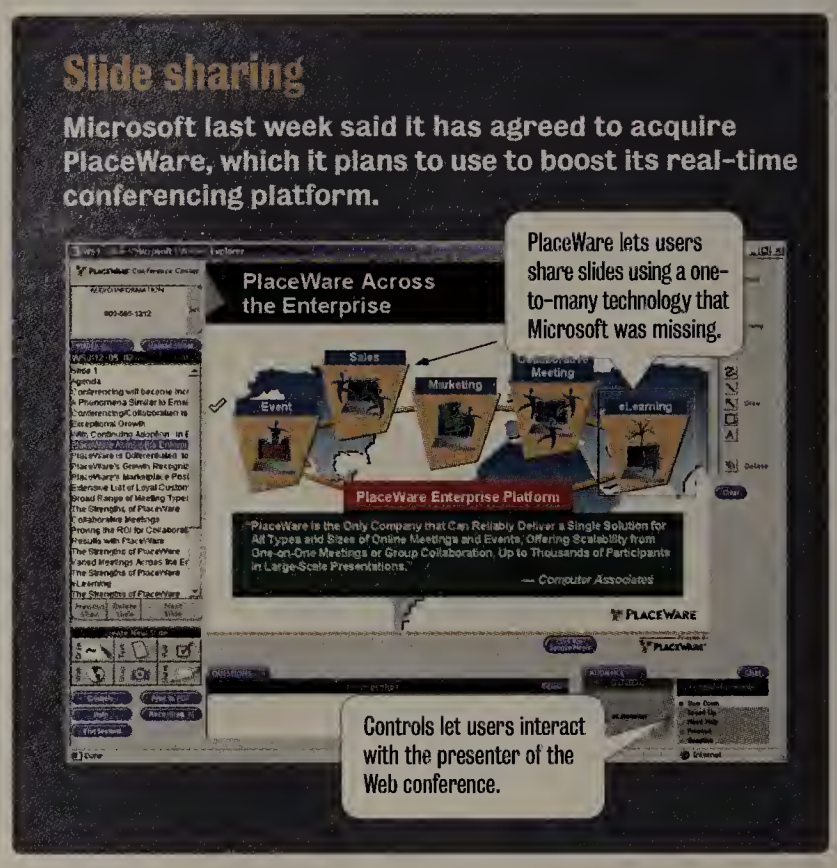
When the software giant agreed last week to acquire PlaceWare, an online Web conferencing service, it plugged some gaps in its conferencing technology and increased its access to service providers, customers, APIs, developers and patented security protocols.

PlaceWare's technology will become a component of Microsoft's real-time platform code-named Greenwich, which is expected to ship later this year as a module that plugs into the Windows Server 2003 operating system, slated to ship April 24. Microsoft says it hopes to cement Greenwich in corporate and service provider networks as a platform on which to build real-time-enabled applications.

The acquisition also serves as a major shake-up in the conferencing market, as vendors now must figure out if they will compete with Microsoft, build applications on top of Microsoft's platform or offer complementary services such as gateways that enhance the platform.

"Conferencing vendors that stand still will be flattened," says Christine Perey, president of Perey Research and Consulting Services.

Greenwich offers real-time services to applications that can incorporate features such as instant messaging/presence, and data, voice and videoconferencing. The platform would be used not only for applications for communicating between people, but also between devices and people.



A monitoring application could use the real-time platform to locate a user on a network, send an instant message to the user's device, and establish a real-time conferencing session between that user and someone else.

Greenwich supports standards such as Session Initiation Protocol and SIP for Instant Messaging and Presence Leveraging Extensions to foster integration.

Integration of that type is known as contextual collaboration, which means that the real-time features are a built-in component of an application and that users don't have to leave that application and open another for things such as data conferencing.

Microsoft rival IBM/Lotus is building a similar platform using its WebSphere, Domino, Sametime and QuickPlace technologies.

But PlaceWare's traditional rivals, WebEx and Raindance, which have built conferencing networks and services, say conferencing is a defined product category instead of a component of a collaboration suite.

"Part of their effort now is to defend that turf," says Andy Nilssen, an analyst with Wainhouse Research.

"The question is, will the market buy conferencing as a service or as a feature of an entire IT platform?" he adds.

Microsoft is using PlaceWare to strengthen its conferencing position, according to Perey.

She says PlaceWare has built strong integration with Microsoft products, including a rapid meeting plug-in developed last year for Outlook. ■

Microsoft delivers awaited CRM software

■ BY ANN BEDNARZ

REDMOND, WASH. — After two years of development — and a year of speculation and posturing by the competition — Microsoft CRM has hit the streets. It might lag behind the competition in terms of functionality, but industry watchers expect that gap to narrow in future releases.

Microsoft CRM is aimed at companies with fewer than 500 employees — a largely untapped market, according to analysts. Gartner estimates that only 2% of small businesses and 20% of midsize businesses have adopted CRM.

Winning over the small and midsize CRM market won't be easy, however. Microsoft will have to play catch-up to established CRM vendors such as Best Software and FrontRange Solutions, and hosted CRM providers such as Salesforce.com, Upshot and Salesnet.

"Microsoft is a big force to be reckoned with, but its [success is] not a slam-dunk," says Laurie McCabe, vice president and practice director at Summit Strategies.

Market realities

Microsoft CRM is stirring up the market, but it's no sure thing.

Strengths

- Strong sales channel.
- Competitive pricing.
- Experience with small and midsize customers.
- Marketing muscle and development dollars.

Challenges

- Late to market.
- Immature features compared with competition.
- No industry-specific versions.
- Limited support for offline users.

Microsoft's first-generation CRM product focuses on salesforce automation — contact management, lead management and forecasting — but doesn't include marketing automation or call center features.

In addition, it's a tough environment for selling CRM. The worldwide CRM software market contracted by about 19% from $3.7 billion to $3 billion last year and is forecast to remain at $3 billion this year, Gartner says.

In Microsoft's favor is its experience selling infrastructure software such as Windows, Outlook and SQL Server to small and midsize businesses, experts say. Microsoft also is touting tight integration between its CRM offering and its Outlook and Office applications. Built on the Microsoft .Net infrastructure, Microsoft CRM is accessible both as a browser-based application and through Outlook.

Outlook and Office integration is important, given the amount of time salespeople spend sending e-mail, booking appointments and preparing sales presentations, says Kevin Scott, senior analyst at AMR Research. But it's no magic bullet, he cautions. Outlook integration is "a handy tool to have, but it's not much more than that ... Microsoft will need to round that out to move up market," he says.

Microsoft CRM requires Windows 2000, Active Directory and SQL Server, which means setup costs are higher than for a hosted CRM service, McCabe says.

Initially, analysts expect Microsoft will have success selling its CRM product to users of its back-office applications, such as those Microsoft gained when it acquired ERP vendors Great Plains and Navision.

Integration with these applications will make Microsoft's CRM product even more appealing, McCabe says. For this release, Microsoft integrated its CRM and Great Plains software, but that's as far as it has gotten, she says.

"Integration is a good story, but the reality is that it's still a work in progress," McCabe says. In terms of back-office integration, "Microsoft has as far to go as everybody else," she says.

Gartner predicts that Microsoft will prevail in the end. It will be among the top-10 CRM application vendors by year-end and in the top five by 2006, the research firm says.

Small CRM vendors such as Best and FrontRange will be the first to feel pressure from Microsoft's arrival, Scott says. As Microsoft grows its CRM software, it will begin to pose a threat to midsize CRM vendors such as Epicor Software, Onyx Software, Pivotal and StayinFront, "but not until the second or third generation of Microsoft CRM," Scott says.

Top-tier vendors with designs on moving downstream to target midsize companies such as PeopleSoft, SAP and Siebel — might run up against Microsoft, but not in the short term.

The Standard Edition of Microsoft CRM costs $395 per user plus $995 for the standard server. It's aimed at stand-alone CRM settings that don't require extensive business automation and integration requirements, Microsoft says.

The Professional Suite Edition costs $1,295 per user plus $1,990 for the service and sales servers. It adds workflow rules, customization and back-office integration features. ■

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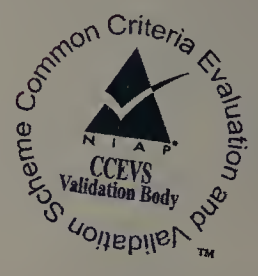

National Information Assurance Partnership

MICROSOFT WINDOWS 2000

Awarded Common Criteria Certification
Evaluation Assurance Level EAL: 4+
Report Number CCEVS-VR-02-0025

Common Criteria

Common Criteria Testing Laboratory: Science Applications International Corporation
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Microsoft

ISS reins in security mgmt.

BY ELLEN MESSMER

ATLANTA — Internet Security Systems last week reinforced its security management package, SiteProtector, to let it manage and correlate information about security events from across its family of intrusion-detection and vulnerability-assessment products.

SiteProtector 2.0 provides a central console that unifies ISS products such as Internet Scanner and the Black Ice desktop intrusion-detection system (IDS) and firewall software, which previously required separate management consoles.

According to an independent lab that tested SiteProtector 2.0, the new ISS central management console makes it far easier for network managers using ISS products to get an accurate picture of attacks while lowering the likelihood of false positives.

"This approach can reduce false alarms and can certainly reduce the load on the administrator, since it would be possible to record all suspicious events for trend reporting and forensic analysis," said a report from NSS Group. NSS kicked the tires on the beta version of SiteProtector 2.0 last month as part of a larger analysis of six IDS products.

However, the NSS Group lab report added: "SiteProtector still shows signs of being a new product, sporting a number of rough edges." The report said there's a "clumsy and long-winded" process involved in setting up security policy via SiteProtector.

Though ISS has reached a milestone in bringing its own IDS and vulnerability-assessment tools under one management umbrella, the firm has downplayed the notion that it would be building an overarching security information management (SIM) product to centralize correlation, reporting and management for products other than its own.

Symantec, Computer Associates, Check Point and a few startups, such as ArcSight, are in a race to build SIM-related products to handle multivendor IDS, firewalls, antivirus software and authentication servers. Last year, ISS was talking up how it also would build SIM with future versions of SiteProtector. ■

Lotus

continued from page 1

store. That architecture is what IBM/Lotus is calling its "next-generation" Domino. The e-mail module has no official name but is being dubbed Next Gen Mail.

Also, users say IBM is pushing WebSphere in subtle ways, including offering licensing discounts to those who agree to test WebSphere and Lotus Enterprise Integrator (LEI) to tap into DB2.

Jim Cimino, president of Lotus business partner Bright-ideas Software, says Lotus employees have been joking with users that "it's time to drink the blue Kool-Aid."

Also fueling uncertainty is the recent replacement of Lotus General Manager Al Zollar with Ambuj Goyal, an IBM veteran like Zollar, and a WebSphere expert.

"I'm hoping with someone new at the top they will come clean and lay out exactly what they are doing. If they wait until after Lotusphere they are making a big mistake," says Dave Burrows, Lotus Notes administrator for Gundersen Lutheran Medical Center in LaCrosse, Wis.

"I don't want to be blindsided," Burrows says. "They need to say this is where we are going and get some feedback instead of pushing us like they did last year by killing the Java support in R6."

Last year's Lotusphere ended in grumbling after Lotus quietly admitted it was cutting a technology from the yet-to-be-released Domino R6 called Garnet that supported the use of Java Server Pages (JSP). Users called the move an attempt to cripple Domino in favor of WebSphere.

IBM/Lotus said last summer that R6, which shipped in October, will be followed in 2004 by another release of Domino and that the "next-generation" platform built around WebSphere would begin to emerge this year. Last year, the company said Domino would remain on those two tracks into the foreseeable future.

"We know Domino will be there in the future in one form or another, but what that form will be is the big question among the business partners," says Ron Herardian, CEO of Global System Services, a consulting firm, that is introducing at Lotusphere a messaging application focused on regulatory compliance. "There are a lot of technical reasons that Domino on WebSphere makes sense, but the reality is that most users run Domino for mail, calendars and contacts, and don't build applications or portals, and don't understand WebSphere."

Lotus is under pressure from Microsoft, which now boasts more Exchange users than Lotus does Domino users and also is producing collaboration components. Both vendors face pressure from pure messaging servers, such as Critical Path, Gordano, Mirapoint, Rockcliffe and Stalker, which offer lower costs.

IBM/Lotus might shed light on Domino's future with the introduction at Lotusphere of an e-mail server component that plugs into WebSphere and DB2 and is expected to ship in April. The component was built from scratch and is not a Domino spin-off. It supports Simple Mail Transfer Protocol, POP3 and Lightweight Directory Access Protocol, and integrates with Domino and its address book. In the fall, Lotus is expected to add a calendar component.

While the mail component is being touted as an inexpensive way to service users who don't need a more costly Domino seat, it also might be seen as a test case to show users how collaboration components will plug into WebSphere and offer services to application developers.

"They have not shown how components work. We have not seen much of this except in demos," says Scott Wenzel, a Notes administrator for a federal agency and the creator of several unofficial Lotus Web sites.

He says this year's Lotusphere might be more like the one in 1995, when Lotus said the focus was no longer on cc:Mail but on Domino. "This could be like that. — less focus on Domino and more on WebSphere," he says.

That appears to be the case with two other planned announcements that focus on getting developers familiar with WebSphere and Java. Lotus will introduce the Lotus Domino Toolkit for WebSphere Studio, which provides a JSP library and allows Domino Access from Java 2 Platform Enterprise Edition and JSP environments. It is designed to transition Domino developers into the Java world. Lotus will make it available for free this spring.

Lotus also will introduce rapid application development capabilities, the cornerstone of Domino application development, in WebSphere Studio Site developer.

It is expected to ship in the first half of next year, but pieces of the technology might be released sooner as part of WebSphere Studio products. ■

Fade to blue

IBM/Lotus is moving Lotus Domino into the IBM software portfolio, a task the company has said will take years to complete.

Strategies

- Turn Domino into a set of components for use on WebSphere.
- Replace the Domino back end with the DB2 database.
- Create a middleware platform for e-business that includes collaboration services as a key feature.

Challenges

- Calm concerns of Lotus installed base and business-partner population over the long-term future of its "now-generation" Domino platform vs. its "next-generation" platform focused on WebSphere.
- Convert legions of Domino developers to Java.
- Articulate strategies and programs of newly appointed General Manager Ambuj Goyal.

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iSCSI

continued from page 1

arrays, experts say.

"It takes more than one vendor to do this — it takes the entire industry to offer support for it," says Jamie Gruener, senior analyst with The Yankee Group.

Only IBM and Eurologic have incorporated iSCSI into their arrays. Sources say EMC has an iSCSI-enabled midrange Clariion array running in its labs and is expected to introduce products in the first half of this year. HP will iSCSI-enable its StorageWorks products with switches and routers in the first half of this year, according to Karl Walker, HP's CTO for Industry Standard Servers. HP also is hoping to introduce native iSCSI storage arrays and server hardware by year-end, he says.

The IP Storage Working Group last week announced that the iSCSI specification would be approved by the IETF sometime in the next two months. The iSCSI protocol allows the transport of SCSI data over an IP network rather than a separate Fibre Channel network, thus saving money and simplifying management. Delay of that approval as vendors iron out technical issues has dampened much of the initial enthusiasm for the protocol.

Meanwhile, there were other signs of heightened interest in iSCSI last week at the Server I/O Conference in Monterey, Calif., including:

- EqualLogic's announcement that it will launch an iSCSI storage array in the first half of this year that replaces direct-attached storage and automatically provisions and load-balances resources.
- Okapi Networks' introduction of a disk-to-disk-to-tape appliance called the ipXcelerator D2D2T, which uses the iSCSI protocol to back up data from servers to inexpensive Serial ATA drives.
- Alacritech's announcement of an iSCSI driver for Linux servers.
- Cenata Networks' announcement of one of the first iSCSI drivers for Solaris SPARC-based servers, which is expected to ship in April.

The iSCSI protocol is implemented in software and in three types of gear: Gigabit Ethernet or host bus adapters called initiators, iSCSI switches/routers and storage arrays called targets.

Cisco, IBM, Alacritech, Qlogic and Emulex offer an abundance of iSCSI software drivers and adapters. The adapters communicate with target storage arrays or IP storage routers from Cisco, Nishan Systems, SANRAD and Stonefly Networks, which connect to SCSI or Fibre Channel storage arrays.

Analysts say users who have implemented iSCSI have done so with iSCSI routers and switches because of a paucity of target storage arrays.

Users who have tried early, prestandard iSCSI products say they have been satisfied. St. Croix Woodwork in Stillwater, Minn., uses Okapi's ipXpress product, which converts ATA, Integrated Drive Electronics or SCSI drives into iSCSI storage appliances. The company has about 1 terabyte of data in several remote offices.

"I wanted a technology that was plug-and-play, didn't cost $70,000 and didn't [make me] throw everything away," says St. Croix CEO Jim Jensen.

"We didn't buy the product because it was bleeding edge, innovative or new. We bought it because it solves our problems and it works," he adds. ■

Decision time

What to consider when looking at iSCSI storage.

Pros	Cons
• Less expensive to install than Fibre Channel.	• Native storage arrays not available from most vendors.
• Can use existing Gigabit Ethernet adapters and storage drives.	• Is not robust enough for data center use.
• Can be managed by staff familiar with IP networks.	• Storage data unsecure unless protected with IPSec.
• Doesn't require a separate network.	
• Standards-based.	

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Sprint

continued from page 12

Most carriers have adopted MPLS to support Layer 2 traffic across their IP networks. Meta's Willis says it's not clear if one technology is better than the other, but one difference is that MPLS is a standard while L2TPv3 is not. The Internet Engineering Task Force is reviewing the L2TPv3 draft that Cisco submitted.

No other carriers support L2TPv3, Willis says.

"Supporting tunneling on a large scale has been a problem when managing VPNs in the past," he says. Sprint still needs to prove it has the management tools deployed to support users with thousands of endpoints, he says.

The SprintLink Packet Private Line service is similar to the frame relay service in that customers can migrate to Sprint's IP network, but domestic customers are not expected to see the same type of savings. The biggest cost benefits will be for users supporting dedicated connections between the U.S. and other countries, Parish says.

The third offering, SprintLink Virtual LAN Service lets users connect 802.1Q virtual LAN segments across the carrier's IP network. But today users would have to have all their routers deployed in Sprint data centers or points of presence. Sprint says it will support the service directly from user sites later this year. ■

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Short Takes

■ **Peribit Networks** is branching out from compression into traffic shaping at the same time that it is introducing a new appliance designed to save money and improve performance of branch-office WAN connections. The company, which makes the **Sequence Reducer** family of compression gear, last week upgraded its software to include bandwidth allocation for specific classes of traffic. The software, called **SR System 3.0,** can create up to 16 classes of traffic to which customers can assign up to 40 different applications simultaneously. In all, the Peribit boxes can recognize 256 different applications. The SR devices sit at both ends of WAN links on the LAN side of WAN routers and scan for repetitive patterns in the traffic. It then substitutes shorter patterns to replace those it recognizes, thereby sending fewer bits across the WAN. Peribit also is introducing a new device called the SR-20. Until now, the SR devices have been built for links between T-1 and T-3, but the SR-20 is for lines as small as 128K bit/sec and up to 2M bit/sec. The company says it was built for customers with relatively low-speed but expensive international lines and for those places that are difficult to upgrade to larger circuits. SR-20 costs between $2,900 and $20,000, depending on the speed of the WAN connection over which it presides. CMS starts at $5,000 and increases depending on how many devices it can manage. www.peribit.com

■ **HP** and **Brocade** last week said they would team to develop products that use HP's VersaStor virtualization technology to make it easier to manage storage-area networks. The companies have reached a development agreement to combine HP's VersaStor technology with switches from Brocade's SilkWorm product family. HP VersaStor in combination with the company's OpenView CASA (continuous access storage appliance) software and Brocade's switches would let network traffic be directed intelligently according to a user's needs, the companies say.

In Site: Lessons from Leading Users

Navy set to navigate with wireless LANs

■ BY JOHN COX

Wireless LANs are being installed on Navy warships to free up manpower, reduce crew sizes and improve monitoring of a range of mechanical and electrical systems.

The installation effort, dubbed Total Ship Monitoring (TSM), lets Navy crew members check and control systems from computers anywhere onboard. It's an extension of the Smartship refitting and redesign program the Navy launched in 1996 to let captains command their ships from anywhere onboard.

The USS Howard, a guided-missile destroyer commissioned in 2001 and assigned to the Navy's 3rd Fleet, based in San Diego, is being outfitted with specialized wireless gateways based on the IEEE 802.11b wireless LAN standard. The gateways, which defense contractor 3E Technologies International (3ETI) designed and built, use a radio link to interconnect sensors on gear such as pumps and motors with back-end data processing applications.

So instead of laying hundreds of feet of cabling by cutting through a steel ship and adding weight to the vessel, the radio link makes possible much faster and less-disruptive deployment of the sensors.

A series of mockups and simulations have proven the TSM system works on land. But the critical phase is proving the TSM will work under the demands of combat and life at sea.

"[The Navy is] moving from an industrial-based, manpower-intensive work force, to a new realm of information technology," says David Bartlett, the Navy's Smartship science and technology manager. "There's a lot we can do with IT for automation." TSM is being incorporated into new combat ships being launched and into existing ships.

TSM uses 802.11b wireless LANs, sensing devices attached

See Navy, page 22

The shipping news

The Navy is deploying wireless LANS on its ships to improve the monitoring and control of ship functions.

Sensors: Wireless sensors distributed throughout the ship on everything from the engines to pipes send status data to wireless gateways.

Wireless gateways: 3ETI wireless gateways collect transmissions from sensors and pass them to command/control applications.

Command/control center: Ship captains can monitor and control status of downstream systems from central command center or other locations on the ship.

NFL Films brings VoIP to the Super Bowl

■ BY PHIL HOCHMUTH

SAN DIEGO — Getting to the Super Bowl isn't easy. Just ask Dave Franza, CIO of NFL Films.

"Logistically and technically, it used to be a nightmare," Franza says.

Each year, NFL Films — which produces several NFL shows and films the Super Bowl — sets up a "mini trailer park" of 20 mobile production offices at the big game. Franza is responsible for providing phone extensions and T-1 data connectivity for the 200 workers there — about half the company's staff. This year, he used IP phones at the Super Bowl as a way to cut costs and make things easier on his staff.

"Every year, we've had to rent phones," Franza says, "which means dealing with the local phone company to order all those analog lines." Adding to the confusion is the fact that the Super Bowl is played in a different city each year, he says.

This year, Franza ordered only the usual two T-1 lines for data. He's also bringing about 300 IP phones from Cisco, a Cisco CallManager IP PBX server and enough routing and switching gear, for a decent-sized company or branch office.

NFL Films uses Cisco IP phone gear in its headquarters in Mount Laurel, N.J., that supports about 400 employees. The company switched to IP last year, leaving its Nortel PBX behind. But Franza says he worked with Cisco on the technology for several years.

NFL Films had planned its August 2001 move into a larger facility with improved video facilities and a new, digital editing and storage system since 1999. While planning for the move, Franza tested new iterations of Cisco's equipment, whose features and reliability have evolved and improved since it first came on the market, he says.

The facility now is connected to [illegible]

See NFL, page 22

Q A

Tivoli VP talks storage

Laura Sanders, IBM/Tivoli's newly appointed vice president for storage software, recently spoke with Network World *Senior Editor Deni Connor about how Tivoli storage offerings are positioned from IBM's, the company's acquisitions and where she thinks the storage arena is going. Sanders is an 18-year IBM veteran.*

How does IBM/Tivoli decide whether storage software is branded as an IBM or Tivoli product?

It's really straightforward, and unfortunately, we haven't done a very good job of telling people about it. On the bottom layer, anything that is infrastructure software or affects how the hardware is going to operate is within IBM, so any vendor can manage it. On the Tivoli side, we are the management software and need to be able to have the same conversation with our hardware as we do with Hitachi, EMC, McData or whoever.

You recently acquired a storage resource management [SRM] company called TrelliSoft. How does it fit into your storage plans?

Tivoli renamed all its products last year. Tivoli Storage Management includes Tivoli Storage Resource Manager, which was TrelliSoft's StorageAlert, the Tivoli Storage Area Network Manager and Tivoli Storage Manager, which includes the back-up and recovery products.

Is the time and dollars you spend developing each of these groups pretty much equal?

Backup, archive and recovery — the Tivoli Storage Manager tools — are a much more-established market [than SAN Manager and SRM]. SRM is one step beyond Storage Manager because it gives you a window into your storage that you would have loved to see five years ago, but technology wasn't there, so that's on the forefront. Because the markets are in such different stages, the time you spend on them is different.

For Tivoli Storage Manager, the releases are more incremental, whereas with Tivoli SRM, you can focus on where you think the market is going to go and make changes accordingly.

How do you decide whether you are going to develop, partner or acquire to gain capability?

There are a couple of different factors. The first is time to market. Based on that time to market, will the function be a differentiator or not? For example, if I need the function and it won't be a differentiator over time, let's partner for it. If it is going to be a differentiator, then you say, 'How best can I buy it vs. how fast can I build it?' Then, you have to decide how integrated into my technology it will be. With SRM, for instance, it is a separate product, which made the TrelliSoft acquisition all the better.

The idea of automating storage management and moving data to appropriate storage sources seems to be a pretty exciting area.

That is where Tivoli's products can play well for a customer, because you can have an administrator sit down and figure out where all the data is, do snapshots and come up with a storage strategy, but you can also automate it. After all, manually managing storage is not the most exciting job in the world. We can go in with Storage Resource Manager and see a snapshot of storage or a trend that says every month I have to double my storage. We are going to make a connection between Storage Resource Manager — which lets you take a view of storage — and Storage Manager — which lets you take an action, reallocate storage or change capacity with our storage and others. ■

InSite: Lessons from Leading Users

Navy

continued from page 21

to things such as motors and pipes, and programmable logic controllers, which are special computers that have long been used to control a range of civilian factory machinery, such as cardboard bailers, heating/air conditioning equipment and conveyor lines. "It's been difficult to tie all these pieces together in an integrated fashion," Bartlett says.

Wireless is now a key element in TSM projects. Data from scores or hundreds of sensors can be fed back to access points and servers without the cost, weight and delay of wiring or rewiring steel ships.

The wireless LANs will change the way crew members perform their jobs. "Today, they have to do rounds, every 45 minutes or two hours, for example," says Benga Erinle, director of government operations for 3ETI. "They're checking equipment, machinery and filling out and signing paper logs."

The TSM system is intended to do all this automatically.

"It goes beyond simply gathering information," Erinle says. "We also use programs for diagnostics and prognostics, based on the data. If a critical system is going to fail, we'll pick that up and alert the chief engineer that this is pending."

The TSM system also will change the Navy's longstanding practice of time-based maintenance — of replacing or tearing down machinery after so many hours or days of use.

That is very labor-intensive and not very cost-effective," Bartlett says. TSM will funnel megabytes of real-time data into sophisticated algorithms that can predict accurately when repair work needs to be done. In the past, the Navy hardwired analog sensors into programmable logic controllers and wired these into a computer system called the Integrated Condition Assessment System (ICAS). 3ETI designed an eight-channel analog-to-digital converter, called the 3E 555l gateway, that acquires the data and optimizes the 802.11b radio connection to a remote wireless access point, which links via a wired LAN to ICAS.

The contractor also wrote several software programs. Session Manager is a middleware application, based on the Java Messaging System, that lets an array of different shipboard applications share data. The Prognostics Framework is a lightweight application that runs on the 555l: The software detects changes that meet certain criteria, such as temperature exceeding a given level for a specified time. Then, the software sends an alert to a crew member watching an ICAS terminal.

The radio links are encrypted with either Triple-DES or the newer Advanced Encryption System, both stipulated by the Navy to encrypt data.

"The Navy wants to go from 300-man destroyers to 90-man destroyers," Erinle says. "The only way to do that is to take processes that are highly manual and automate them." ■

NFL

continued from page 21

by a DS-3 line, which is used to move the company's large data flows of content to Web sites such as NFL.com, and other online and TV outlets. The data pipe connects the NFL Films' CallManager to Verizon's backbone, where it is switched to the public switched telephone network.

Franza estimates that converging his voice and data connections with Verizon has let NFL Films cut its phone charges by 65%.

While Franza did not choose IP phones solely for his annual Super Bowl logistics challenge, he says the ability to ship everyone's desk phone to San Diego saves him time and money.

Two weeks before the Super Bowl, Franza's team ships 75 IP phones, 65 PCs, three Cisco routers — 3640 and 2651 models — and more than a dozen stackable Catalyst switches to support the mobile offices outside the stadium. After the T-1 line is set up and the network is live, the IP phones are plugged in and registered with the Call Manager back in Mount Laurel.

"Setting up the phones is something we've battled with every year," Franza says. Now, "we've gone from a four- or five-day process [of setting up phones] down to a day."

Franza's staff no longer has to assign phone numbers to the remote employees, punch down phone wire or mess with phone wiring. End users have their same office phone numbers in the remote trailers with all their personalized features. Unified voice and e-mail messaging also followed NFL Films employees to San Diego this year.

Franza says the quality of the calls is good, even though the T-1s are used for both IP voice and for moving digitized video content from the editing stations in the trailers to remote Web sites, such as SportsLine.com and Superbowl.com.

"Every year we seem to get things running a little more smoothly" at the Super Bowl, Franza says. "I think technology is a big part of that.... Anything you can control and don't have to wait until the last week to handle makes it easier," he says. "Maybe this year, I'll get to have dinner before 11 p.m. while I'm down there." ■

Looking Deeper, Staying Safer

An intelligent infrastructure provides **integrated network security**, keeping your business applications more secure.

When you run your business applications over an intelligent network infrastructure, you're protecting much more than data. You're protecting the value of your IT investments. You're protecting the privacy and productivity of employees, partners, and customers alike. You're improving the reliability and availability of your applications. Ultimately, you're protecting your company's reputation—and its bottom line.

That's why Cisco Systems integrates security features into every part of the network, starting with the intelligent switches and routers that provide the foundation for today's business applications. As a result, you can implement whatever level of protection you need, wherever you need it, even as you implement new solutions and extend access to new users.

An intelligent network infrastructure looks deeper into streams of data to identify unauthorized or malicious users, allowing only appropriate users access to the systems and information they need. And because Cisco switches and routers come equipped with embedded firewalls, intrusion detection systems, user-authentication services, content filtering, virtual private network services, IP security, and other safeguards, you can create multiple layers of defense without compromising performance or complicating management.

By the same token, you'll find an array of security features integrated into Cisco PIX® Firewalls, VPN Concentrators, IDS appliances, IP phones, wireless LAN equipment, content delivery appliances, and virtually every other network device Cisco builds, as well as the Cisco IOS® Software that binds them all together.

Of course, there's always a chance you won't need to take all of these precautions. But as the world leader in creating secure networks, Cisco believes you should never have to rely on chance alone.

Learn how Cisco routers, switches, and security appliances can help you secure your network and deliver a greater return on your investments in technology.

www.nwfusion.com/cisco/security

Integrated security offers multiple layers of defense

Cisco intelligent switches and routers offer an array of embedded security features, enabling you to implement the level of security you need today and to safely deploy IP telephony, wireless mobility, and other solutions in the future. Integrated features include:

Identity-based network services: Using the 802.1x authentication protocol, the network grants privileges based on personal logon info, rather than the device being used.

Access control lists: Users are restricted to designated areas of the network, blocking unauthorized access to all other applications and information.

Encryption: IPSec Virtual Private Networks provide secure tunnels across public networks, establishing secure connections for remote sites and mobile users.

Virtual LANs: Traffic on the LAN can be isolated based on users and applications or business requirements, shielding data from prying eyes.

Rate limiting: Network managers can set bandwidth thresholds, helping to prevent the deliberate or accidental flooding of the network.

Intrusion protection: The network continually scans for signs of hackers, taking immediate steps to stop them before damage is done.

Content filtering: Users are prevented from accessing objectionable Web content, minimizing legal exposure and reducing unnecessary WAN traffic.

SSL optimization: Exploding volumes of SSL traffic can be offloaded from servers, cost-effectively scaling application performance and reliability for network users, while simplifying certificate management.

WIRED WINDOWS

Dave Kearns

You can fool some of the people . . .

At least they aren't using sock puppets. Both Microsoft and IBM have unleashed television marketing campaigns aimed at businesses and their use of the trappings of that elusive category — Web services.

IBM's series of commercials shows a politically correct executive board. Each ad has the board members meeting with what appears to be a consultant in the black arts. We're told about time machines, voodoo, pixie dust, binoculars that see into the future and more. The design is a mishmash of postindustrial society (the consultants) meets Depression-era businessmen (the executives).

According to Chris Wall, creative director for the ads from the Ogilvy agency, "It's about the hype of technology and the overpromise that technology will cure everything." Of course, the tag line is that IBM's eBusiness solutions can cure everything. Even the possible humor in the situations (for example, when someone rubs the magic lamp the phone rings. It's a call for the CEO from "Jeanie") is done in such a heavy-handed and obvious way that I feel embarrassment rather than empathy, for the characters.

A dim view

The Microsoft series, though, is just plain silly. "Software for the agile business" is the theme, and it's supposed to demonstrate that the Web-based .Net solutions from Microsoft allow your company "...to act on opportunities and react to threats — faster than your competition." (No mention of what happens when your competition is using the same software, though.) But in one of these commercials that's running heavily right now, a purchasing agent is demonstrating to his boss how quickly and easily he can place and change orders over the Web, when a co-worker sticks her head in and says she needs a light bulb. When it turns out she only needs one bulb for a lamp in her office, we're all supposed to chuckle. The buyer says he "can't order just one." But a truly agile business needs to be able to order quantity one as well as quantity one million, doesn't it?

Fifteen years ago when I was building an online just-in-time order system (based on Oracle rather than Microsoft software), I made sure it could handle any order for any quantity we could foreseeably need. That's agility.

Kearns, a former network administrator is a freelance writer and consultant in Silicon Valley. He can be reached at wired@vquill.com

Tip of the Week

In case you didn't see my NetWare newsletter (www.nwfusion.com, DocFinder: 4029), you should know that the erstwhile proprietary software company is relying more and more on **open source tools** (Apache, MySQL, Rsync and more) to further the venerable NetWare operating system's functionality. It's a bold move and one we should applaud and encourage. Bravo!

Without the right vision, you're a sitting duck for rogue attackers and cyber phreaks.

WaveRunner

OptiView Wireless Network Analyzer

With only a couple hundred bucks worth of wireless gear, war drivers can pull up to your building and hack your network by catching RF waves from wireless devices inside. Your employees may even be making it easier for them by installing unauthorized access points. If you think WEP protects you, think again. It's child's play for techno geeks. So how do you nab them? Get the **WaveRunner™** pocket-sized wireless security guard. It instantly locates unauthorized users on screen. Or check out our **OptiView Wireless Network Analyzer™**, the only tool to support 10/100/1000 and now wireless Ethernet. Either way, you'll have total SuperVision to catch war drivers red-handed. More good news. The ultimate **wireless reference poster** is now available.

See an amazing virtual demo right now at www.flukenetworks.com/wireless

NETWORKSUPERVISION™

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Special Focus

INFRASTRUCTURE: The early impact of grid.

Grid vendors target corporate applications

■ BY CAROLYN DUFFY MARSAN

Traditionally associated with scientific and technical applications, grid computing is making its first forays into corporate networks as a way to increase utilization of existing corporate systems and networks.

Several software vendors are shipping general-purpose applications of grids such as videostreaming, large file transmission and shared data access. Meanwhile, a growing number of companies — in industries such as pharmaceuticals, electronics, auto manufacturing, energy and financial services — are piloting grid projects across their backbone networks.

These trends point to a growing demand for grid computing on corporate networks during 2003.

"The technology to hook up fast computers to attack a compute-intensive problem has been deployed in academic circles for years," says Alex Linden, research director for emerging trends and technology at Gartner. "The current surge in interest in grid computing is due to the availability of thousands-of-GHz PCs and Fast Ethernet connections to string them together.... One could argue that the average company has a few terahertz of computing power idling during the nighttime."

In grid computing, a compute-intensive or data-intensive application is processed by many distributed computer systems connected via a LAN or WAN. Today's grids range in size from dozens to hundreds of individual systems, which can be PCs, Unix workstations or servers. Most corporations deploy grids on their private IP networks rather than the Internet.

For years, scientists have used grids to solve complex problems in areas such as forecasting weather, modeling nuclear explosions, sequencing genes and analyzing seismic data. What's new is that grids are being used for more practical business problems, including risk analysis, digital content creation and data mining.

"There are two big benefits to deploying a grid," says Peter Jeffcock, group marketing manager for grid computing at Sun. "The first one is obvious, and it is to dramatically increase utilization of systems —compute, network and storage — that you've already got. Typically, systems run at 10% or 20% utilization. With a grid, that can be at 90% utilization. The other benefit is to be able to use more compute power to attack a more challenging problem or to solve a problem quicker."

Companies traditionally have used open source middleware such as the Globus Toolkit 2.2 or the Sun One Grid Engine to manage grid applications, schedule network resources and track system utilization. The free Sun One Grid Engine has been deployed on more than 6,500 grids during the last two years, Sun officials say.

But now vendors including Sun and several start-ups are offering enterprise versions of their grid middleware. Sun last year began shipping an enterprise edition of its Sun One Grid Engine that handles policy setting and scheduling resources. The enterprise edition has attracted customers such as Ford Motor, which uses a grid in the design of its automotive powertrain, and Sun, which has 7,000 systems connected via a grid for semiconductor design.

Similarly, other grid vendors are updating their software with enterprise features such as support for Java, Java 2 Platform Enterprise Edition (J2EE), .Net and other standards, including Lightweight Directory Access Protocol (LDAP), SNMP and security protocols. Vendors say these features will make it easier for corporate IT departments to integrate grid applications into network infrastructures.

In December, start-up Avaki upgraded its Data Grid software with several features designed to attract corporate IT buyers. A dozen pharmaceutical companies use Avaki Data Grid software to provide secure access to large amounts of data stored across distributed systems.

"Pharmaceutical companies have research teams spread around the world, and they need to ensure that the data being used by all their teams is current and consistent," says Tim Yeaton, president of Avaki. "With our software, the data is grid-enabled.... The alternatives are using FTP, which is complex and expensive to deploy, or setting up a separate Web site."

Avaki Data Grid 3.0 is implemented in Java and J2EE and can take advantage of external directory services for user authentication via LDAP. It also supports SNMP, and a company's existing network management software can manage it. In addition, it has built-in failover support for increased reliability.

While Avaki's Data Grid software provisions large amounts of data to a grid, the Avaki Compute Grid handles scheduling for compute-intensive applications across a grid.

Also in December, Kontiki added a grid component to its suite of software, which provides managed delivery of video and other large files across an enterprise network. Kontiki's Grid Delivery Server can be added to its Delivery Management System 2.0 to create a grid out of the existing servers in the network for file delivery.

"It provides more control over delivery parameters, and it can increase network efficiency by as much as 25 times," says Mark Szelenyi, director of enterprise marketing at Kontiki.

Kontiki's new grid software supports a company's existing directory infrastructure and security mechanisms. Any server in the grid can deliver the video content or large file to a user on demand, with the software determining the most efficient way to deliver the file over the network. The grid approach is particularly useful for remote offices with smaller bandwidth connections because it lets a local server provide the video file rather than tying up the WAN connection to corporate headquarters.

Meanwhile, start-up DataSynapse will ship this quarter Version 3.1 of its LiveCluster software, which will include support for Java, .Net, J2EE and Web services standards. Several financial services firms, including Bank of America and Abbey National Group, use LiveCluster to run compute-intensive risk analysis and pricing programs over grids.

Also scheduled to ship this quarter is a new offering from grid pioneer Platform, which has offered a suite of workload, service and performance management tools for distributed computing environments since 1992. Platform's new Symphony product was designed for enterprise grids, and it already has attracted JP Morgan Chase as a flagship customer. Symphony supports standards such as Java and J2EE, and Web services standards such as XML and Simple Object Access Protocol.

On the horizon is a new set of standards called the Open Grid Services Architecture (OGSA) that will make it easier for companies to roll out grid applications that work across heterogeneous networks and the Web. The Global Grid Forum, whose hundreds of members include Sun and IBM, is developing OGSA. The group plans to release the final OGSA documents next month.

Grid vendors anticipate a flood of product announcements this spring, including Web server, operating system and network management software with OGSA support. The Globus Project this month will release the beta version of its Globus Toolkit 3.0, which includes support for OGSA. A final version of Globus Toolkit 3.0 is due out this spring.

Grid proponents say that widespread adoption of OGSA standards is critical for enterprise usage of grids. Sun and IBM plan to support OGSA in their grid offerings during 2003. IBM plans to introduce OGSA support in its Tivoli, DB2, WebSphere and Storage Tank software this year. In addition, IBM will ship OGSA support in all of its operating systems, including AIX and Linux.

"In 2003, we see that the financial industry, governments, life sciences, higher ed and the industrial sector will be hot areas for grids," says Dan Powers, vice president of grid strategy at IBM. "Towards the second half of 2003, when the standards come out and products include them, that's when we'll see more general-purpose uses of grids." ■

Grid software targets enterprise customers

Existing applications, industry standards supported.

Company	Avaki	DataSynapse	Kontiki	Platform	Sun
Product	Data Grid 3.0	LiveCluster 3.1	Grid Delivery Server 2.0	Symphony	Sun One Grid Engine Enterprise Edition 5.3
Description	Provides secure data access and sharing across distributed systems.	Creates and manages grid for compute-intensive applications.	Uses a grid approach to send video and other large files across an enterprise network.	Open, service-oriented architecture for grids in financial services and other companies.	Creates a campus grid, schedules resources, enacts usage policies.
Cost	Starts at $25,000	Typically costs $100,000	Comes bundled with Kontiki's Delivery Management System	Not available	Starts at $20,000
Ship date	December 2002	First quarter 2003	December 2002	First quarter 2003	Spring 2002

THE ENTERASYS EDGE

News and Information from Enterasys Networks Vol.1, No.1

Powering Up; Keeping Costs Down

"It's simple: If our people can't access the network, our customers go dark," says Chuck Benton, network analyst at Sierra Pacific Resources, a private utility that provides electricity to 843,000 customers throughout Nevada and northeastern California.

Fortunately, Sierra Pacific has a robust enterprise network that not only ensures the highest availability, but supports new business-enhancing applications—such as videoconferencing—to improve productivity and streamline costs.

The Bottom Line: More than $277,000 in yearly savings.

Find out more at **enterasys.com/nw/sierra-pacific1**

Security Concerns? Harness Built-In Enterprise Switch Features

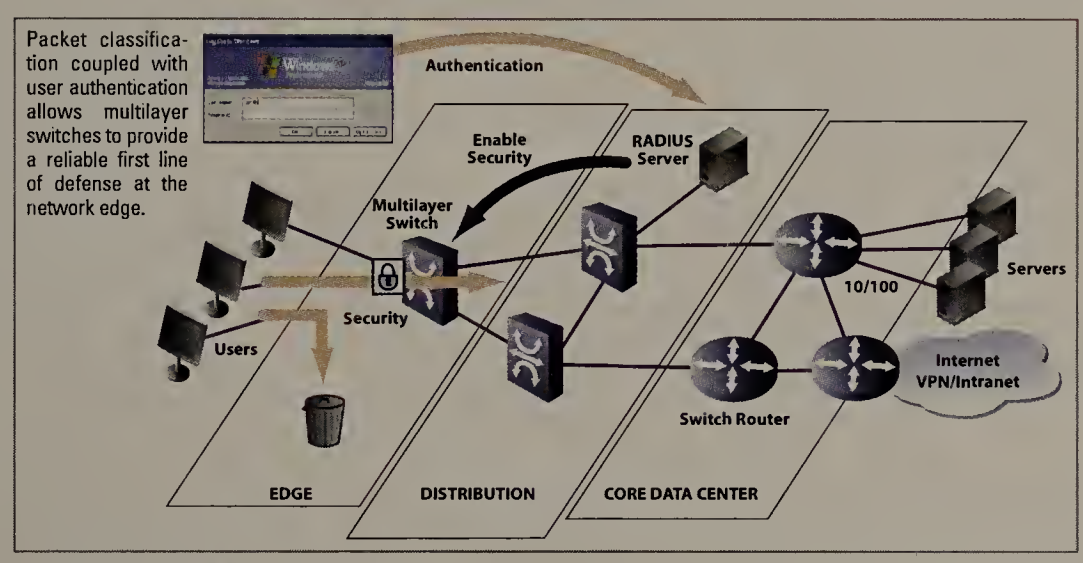
While the first automobile seat belts were invented 100 years ago, it wasn't until the 1980s that they were used with great frequency. Similarly, the enterprise network has provided a level of built-in security many organizations may have overlooked. But because the network is now an integral part of the business—with much more at stake—companies are now looking to beef up their security any way they can.

The Evolution of a More Secure Switch

Enterprise switching technology has evolved over the last several years to include security features that are implemented with "just a click." **Multilayer packet classification,** sometimes referred to as Layer 2+, enables a switch to take action based on criteria other than a PC's address (Layer 2) or the next router hop (Layer 3). This means a switch can switch, prioritize, limit, or block packets based on a number of factors, including the type of application, protocol, Quality of Service (QoS), and even the user.

However, in select multilayer switches, built-in packet classification provides for additional security services:

- **Deny Spoofing Service** allows the switch to enforce a set of rules that prevents a user from acting as a valid administrative service—for example, attempting to resolve DNS queries as a DNS Server.



- **Deny Unsupported Protocol Access Service** allows the switch to deny all "unsupported" protocols, such as routing protocols (RIP, OSPF, etc.) originating from a user, or older protocols such as IPX and AppleTalk.
- **Intrusion Prevention Service** allows the switch to deny traffic containing well-known Layer 4 ports associated with attacks on network resources. This helps safeguard the entire network by blocking known attacks, such as common port scans.
- **Limit Exposure to Denial of Service (DoS) Attacks Service** is a set of rules that allows the switch to deny or limit the use of protocols known to be DoS attacks, such as limiting the bandwidth allocated to a user for ICMP (ping).
- **Protocol Priority Access Control Service** lowers the overall priority of less important network traffic. By lowering the Class of Service given to this traffic, the administrator limits the impact of the resource-intensive application, but the user community can still take advantage of the access they have come to expect.

What About Authentication?

To extend security even further, more advanced multilayer switches support a variety of standards-based **802.1X user authentication** mechanisms that identify each user.

To learn more about this critical security feature and others that can be deployed easily with a click—much like a seat belt—go to **enterasys.com/nw/security-concerns1**

The Matrix E1: The Right Switch at the Right Price

The Matrix E1 Multilayer Workgroup Switch and Gigabit Workgroup Switch from Enterasys Networks provide industry-standard switching and routing, enhanced with advanced packet classification and Quality of Service (QoS) features.

Compare the Matrix E1 Series with Cisco's Catalyst 3550 Series for capacity, performance, and flexibility:

- **Capacity**—The Matrix E1 has twice the number of 10/100 ports as the Catalyst 3550-48.
- **Performance**—The Matrix E1's packet forwarding rate is 60% higher than the Catalyst 3550-48.
- **Flexibility**—The modular Matrix E1 supports a wider range of technologies (10/100, 10/100/1000, 100FX, 1 Gig), while the Catalyst 3550-48 is a fixed-configuration switch supporting only 10/100 and 1 Gig.

The Matrix E1 delivers all of these advantages at a more competitive price.

With multilayer packet classification, the Matrix E1 also supports sophisticated security capabilities (see above). When combined with Enterasys' NetSight Atlas management platform, the Matrix E1 provides the advantage of highly secure network access for both users and administrators.

Other important security-related features include support for 802.1X Authentication, MAC Address Authentication, MAC Port Locking, Access Control Lists (ACL), Extended Access Control Lists (ACL) and policy-based services (anti-spoofing, unsupported protocol denial, intrusion prevention, and DoS Attacks limits).

The Matrix E1 is part of a full line of high-performance, multilayer switches from Enterasys Networks. To learn more about this highly secure, competitively priced switch, go to **enterasys.com/nw/right-switch1**

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- WIRE-SPEED TRAFFIC MONITORING/ANALYSIS
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Spam: New year, same old story

■ BY JOHN FONTANA

It's a new year, but unfortunately the spam story is getting worse.

Junk-mail buster Postini, which processes about 40 million messages per day through its hosted service, reported earlier this month that spam as a percent of overall e-mail volume grew by more than 150% in 2002 and that the average user's e-mail volume is now polluted with 60% spam.

With those staggering facts in mind, vendors are rushing to answer corporate demand for tools to fight the attack.

IntelliReach last week released MessageScreen, which is available as as an antispam appliance or as software that can be deployed behind a corporate firewall. Startup FrontBridge this week is rolling out its first offering — a hosted spam and virus protection service called Enterprise Message Management Services.

Later next month, MailFrontier will add upgrades to its antispam technology.

Corporations are more interested than ever in this technology as they begin to realize the true costs of spam and its drain on corporate resources. Spam is expected to cost American corporations $10 billion in 2003 or about $14 per user, per month, according to Ferris Research (see graphic).

"It's quickly getting worse," says David Ferris, president of Ferris Research. "IT has to start taking action." Ferris says that can include user education, industry initiatives and technology.

Options are coming from hosted services and enterprise-class applications with IntelliReach, FrontBridge and MailFrontier competing with others such as Brightmail, MAPS, Postini, Trend Micro, Tumbleweed, ActiveState, Cloudmark and a host of antivirus vendors that are adding spam blocking to their software.

IntelliReach's MessageScreen comes in two versions: an appliance that operates on an embedded version of Sun Solaris or as software that runs on Windows 2000.

The products are based on technology the company acquired earlier this month from MX Sciences, which developed an antispam filter. The software analyzes an e-mail message and scores it based on content to reduce false-positive reports. The score is compared with a sensitivity ranking an administrator sets to determine if it should be blocked.

The software also provides users a tool to manage their own lists of quarantined e-mail and an antivirus feature called Attachment Parking, which stores attachments outside the mail system and lets users download them via a Web browser.

Pricing for MessageScreen starts at $1,200.

"As spammers get more creative we have to evolve to things like natural-language processes and sophisticated content analysis," says Greg Arnette, CEO of IntelliReach.

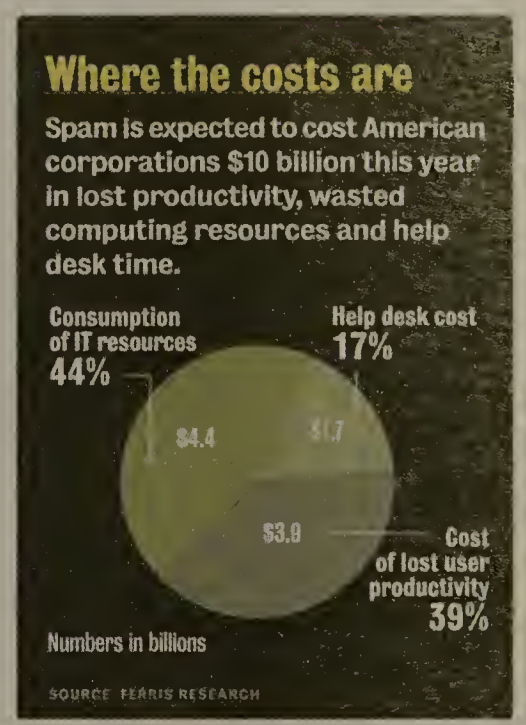
This week, FrontBridge, previously Big-Fish Communications, formally introduces its service called Enterprise Message Management Services.

The service is supported by a network of seven data centers and incorporates an antispam engine that has four layers — blacklist, content filtering, fingerprinting and scoring.

The fingerprinting matches messages that have been altered only slightly to avoid easy detection by spam filters and deletes them as a group. The scoring system has nearly 8,000 rules for grading the positive and negative words within a message. FrontBridge also has a service that catches outbound mail and checks it for compliance with company e-mail policies. The service also provides Web-based reporting and administration tools.

FrontBridge also plans to add an archiving service before year-end.

The software is priced at $2 to $3 per user. ■



Short Takes

■ **PKWare,** which makes data-compression software that the company says can reduce file sizes up to 95%, this week will unveil four new products that add a host of new security features, including password protection, public-key encryption and the private-key encryption algorithms Advanced Encryption Standard and Triple-DES. **PKZIP 6.0 Professional Edition,** which starts at $30 per seat, supports Windows and Lotus Notes. **PKZIP for Unix 6.0,** starting at $200, now supports the X-Windows graphical user interface. **PKZIP for OS/400 6.0** starts at about $1,000, and PKZIP for MVS 6.0 at $5,000. www.pkware.com

■ **DataPower Technology** announced the **XS40 Security Gateway,** which can be used to filter and validate XML-based information, such as Simple Object Access Protocol requests or purchase orders, through digital signing. The XS40, which costs $60,000, includes a built-in Secure Sockets Layer accelerator and policy management console. www.DataPower.com

■ **Wily Technology** last week released a new version of its Java application management software. **Introscope 4.0** features an agent that can monitor live performance and availability data from non-Java application sources. The agent can monitor the performance on Windows NT and Sun Solaris operating systems, and Internet Security System and Apache Web servers. The software also now can monitor BEA Systems' WebLogic and IBM's WebSphere applications. Available now, Introscope 4.0 costs $6,250 per managed CPU. www.wilytech.com

Patently prolific

IBM secured more patents than any other company in 2002.

■ BY ANN BEDNARZ

Several inventions devoted to grid computing and self-healing systems are among the 3,288 U.S. patents that IBM secured last year.

Big Blue was the leading patent producer in 2002 by almost 1,400 over the second-most productive company, Canon Kabushiki Kaisha, which earned 1,893 patents, according to the U.S. Patent and Trademark Office.

This marks the 10th consecutive year that IBM generated the most U.S. patents. By IBM's count, its 10-year total is 22,357.

It's not just IBM's research division that's churning out patents, says Jim Russell, director of emerging technologies in IBM's application integration and middleware division. "It really crosses all of our divisions — software, hardware, services and research produce patents."

It's natural — and expected — for IBM employees to come up with innovative solutions to technology problems in the course of their daily jobs, whether that's working on product development or in the field with customers. "It's the kind of thing that people are encouraged to do," Russell says. "Patents are an expected part of a technical individual's job."

This year, the number of patents related to autonomics and grid computing is not surprising, given that there's a corporate initiative to make IBM's e-business on-demand strategy a reality for customers. "The more people are looking at it, the more innovation is coming out of that," Russell says.

See Patents, page 30

More online!

Five hundred hackers, programmers and [illegible] gathered at MIT recently to find a way to [illegible] forever. See what they determined.

DocFinder: 4032

'NET INSIDER
Scott Bradner

Discussing the truth

Network Associates thought it could override the U.S. Constitution by using a type of shrink-wrap license.

Recently, a New York state court told the company otherwise. The decision is potentially important in what it says, but it might be more important in what it could imply.

Network Associates is not the only software company that has tried to keep people from saying just what they think of their vendors' products; it's just the first to get sued over trying to do so. Network Associates has included these two clauses in the license for its products:

"b. The customer shall not disclose the result of any benchmark test to any third party without Network Associates' prior written approval.

"c. The customer will not publish reviews of this product without prior consent from Network Associates, Inc."

The court said that including the clauses was deceptive because they could never legally be enforced, yet Network Associates implied that it was a legal restriction by including them in the license. The court has asked for sales records for all products that included this clause so that the court can figure out what fine Network Associates should have to pay.

The company claimed that it did not mean what it clearly said; Network Associates said it just wanted to be sure that people were reviewing current versions of the products.

But the court did not buy that request to ignore the plain meaning of the text. Network Associates has since changed the language, at least on its Web site, to be more in line with what the company said was its purpose all along (see www.nwfusion.com, DocFinder: 4036).

These types of restrictions are not new, but have seemed to be getting more common. The only possible explanation for them was to keep you from saying that a product was crap if that was your experience.

That restriction might be good for a vendor of crappy software but not for anyone else. I hope that the court's decision is upheld after the appeal that Network Associates said it is going to file. I wonder if Network Associates has some underlying software quality reason to keep people from saying what they think?

But the main importance of the decision might have nothing specifically to do with the restriction of free speech. Ken Dreifach, chief of the Internet bureau for New York State's attorney general office, noted that the decision "raises the issue of whether these types of clauses — whether they restrict use, resale or the right to criticize — are enforceable."

There are lots of clauses in software — and technology being added to products — to restrict the purchasers' right to use or resell the products they buy.

One example is the copy protection in some music CDs that restricts the user's ability to play the music on their PCs or to sell it to a friend in some other part of the world.

Another is the restriction on loaning, leasing or reselling that a number of software vendors, including Network Associates, put on their software products. Maybe Network Associates will be back in court again soon.

Disclaimer: I did not ask the Harvard Law School, sort of a legal arms merchant that trained the New York State attorney general and likely some the lawyers on the other side, its opinion on this case — it's all mine.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

Patents
continued from page 29

E-business on-demand will require end-to-end systems management of varying sets of distributed server, storage and network resources, aided by new tools and techniques such as automated resource replication and failover, IBM says. Here are some of the patents that will influence e-business on-demand:

- Patent 6,356,929: "Computer system and method for sharing a job with other computers on a computer network using IP multicast" allows for job sharing among computer resources in a network or grid. For example, an overworked computer can send jobs over a network to other computers, which will perform the assigned tasks and return the results to the requesting computer.
- Patent 6,345,369: "Environmental and power error handling extension and analysis for systems with redundant components" details a method for a computer to monitor itself and determine if its environment is causing a component failure. It detects the environmental effect on system faults — an important step toward self-healing computers, IBM says.
- Patent 6,412,025: "Apparatus and method for automatic configuration of a personal computer system when reconnected to a network" is about automatic network reconnection. It describes how a computer can automatically detect when it has been moved in a work environment and will subsequently establish new network settings to reconnect to the network.
- Patent 6,480,972: "Data processing system and method for permitting a server to remotely perform diagnostics on a malfunctioning client computer system" describes a self-healing technique. It permits a server to perform remote diagnostics on a malfunctioning client computer system that's connected to the server via a network.

A key point of the invention is that the malfunctioning client is not restarted to run the diagnostic program, which preserves the malfunction for subsequent analysis, IBM says. Instead, a network adapter operating as a bus controller within the malfunctioning client will execute the diagnostic program and send the results to the server.

- Patent 6,449,676: "Hot-pluggable voltage regulator module" has to do with replacing a computer system component without powering down the computer system. Specifically, a defective voltage regulator can be replaced while the system is running without creating a disturbance on a circuit board's voltage rails, IBM says.
- Patent 6,442,713: "Cluster node distress signal," describes a distress system that transmits a message in the event of a computer failure to all of the other computers in a cluster so that processing responsibilities for the failing computer can be reassigned.

In the consumer area, IBM's 2002 patents cover inventions such as a sensor-based system that monitors a vehicle's mechanical health and calls for at-home service, such as an oil change; a method of filtering spam from e-mail; and a way to turn a PDA into a television remote control. ■

Royal revenue

IBM's patent portfolio has yielded about $10 billion in intellectual property royalties over the past 10 years, according to the company.

Microsoft enhances productivity applications

■ BY JAMES NICCOLAI

Microsoft last week released new tools that are intended to help businesses get more bang for their buck with three of its productivity applications: FrontPage 2002, Project Standard 2002 and Visio 2002.

Microsoft's Right Tools Toolkits are aimed at customers in five specific fields — human resources, accounting and finance, sales and marketing, government, and projects and process management — and are intended to help them get more use out of their software, the company says.

Each tool kit includes templates that make it easier to create Web pages, charts and other documents related to the particular field, and "cheat sheets" that show how to perform common tasks more quickly, says Melanie Cosklo, lead product manager for Microsoft's productivity applications.

For people working in human resources, the tool kit for FrontPage includes templates for building Web sites that provide information about benefits, recruiting and compensation. The tool kit for Project includes templates for managing a recruitment campaign and other relevant tasks, Cosklo says.

Microsoft will offer five kits, each of which includes tools, templates and other resources. Many customers already might own licenses to these applications through volume licensing agreements but might not know it or be aware of what the applications can do, she says.

"It's a good idea because it allows them to target verticals with what is actually quite a low price point," says Rob Enderle, a research fellow with Giga Information Group. It's also good for customers, he says, because "that particular vertical can get up and running without having to do expensive custom engagements."

The tool kits also give Microsoft a way to provide new features that are relevant to particular lines of business without having to cram more features into the standard versions of its applications, Cosklo says.

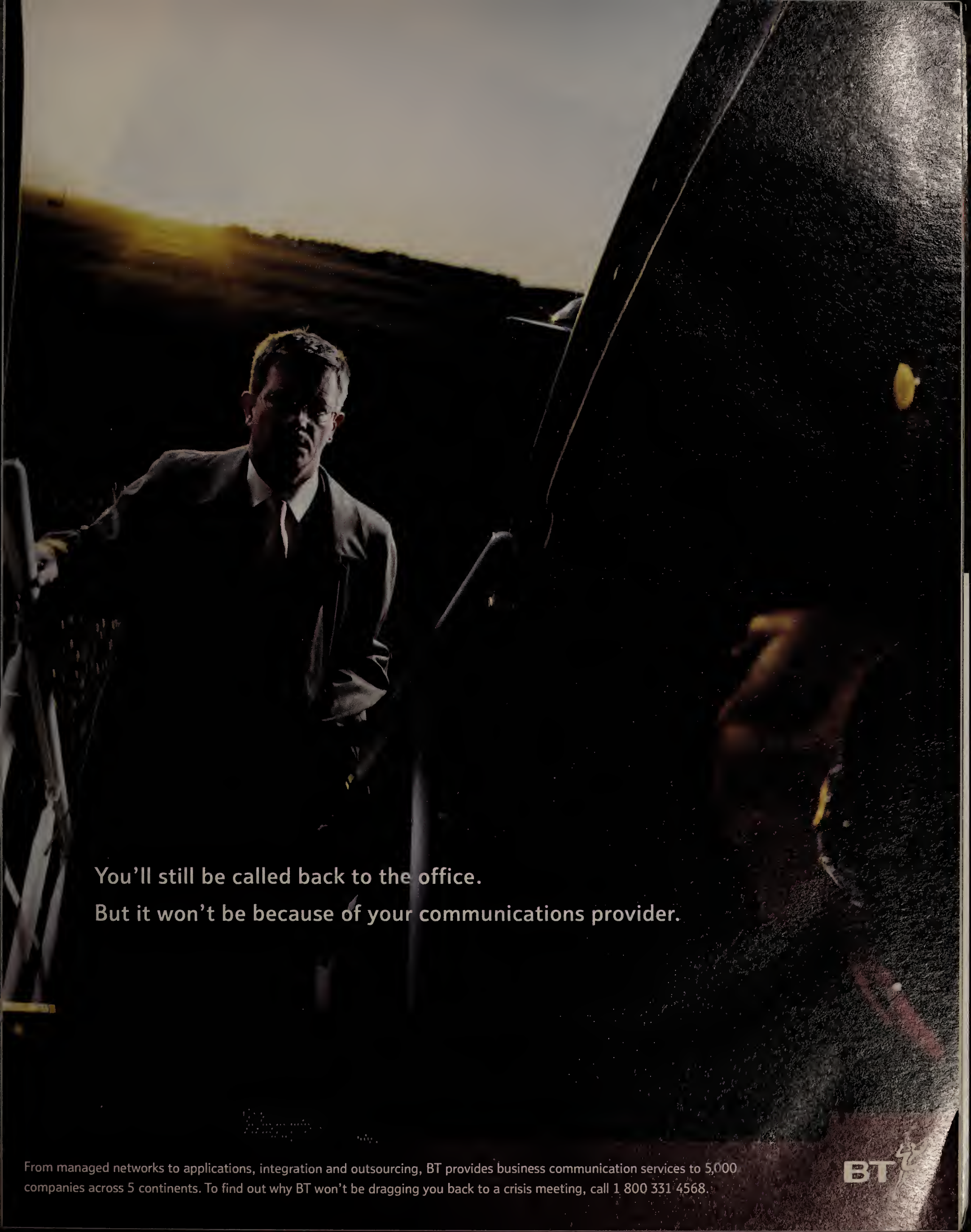
The tool kits are based on the 2002 versions of the applications, but customers with older versions of the software can use most templates, Microsoft says.

New and existing customers can register for the Microsoft Right Tools Toolkit free of charge at www.msrighttools.com. New customers will receive a 90-day evaluation license for each application.

Microsoft also announced a rebate program for the three applications. Customers who don't already own the applications might be eligible for a $50 rebate on Microsoft Project Standard 2002, a $50 rebate on Visio 2002 and a $25 rebate on FrontPage 2002 when they buy them at Amazon.com, Microsoft says.

The Right Tools Toolkits and the rebates will be available through June 30, Microsoft says.

Niccolai is a correspondent with the IDG News Service's San Francisco bureau.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WorldCom touts real-time apps monitoring

■ BY DENISE PAPPALARDO

CLINTON, MISS. — WorldCom is offering enhancements to its Private IP service that lets users set up application-specific monitoring and view VPN performance statistics in real time.

Called Private IP Platinum, the service lets WorldCom's Multi-protocol Label Switching (MPLS) IP VPN users better track network performance by monitoring not only network availability, latency and packet loss, but also specific application performance.

"Carriers seem to be realizing that they need to not just offer VPN service, but also offer tools that help customers monitor these networks," says Steven Harris, an analyst at IDC. "These types of tools will let customers keep a better eye on their carrier to be sure it is living up to its guarantees."

WorldCom's standard Private IP offers four classes of service using the Internet Engineering Task Force's Differentiated Services (Diff-Serv) specification. The enhancements lets users track the usage and performance of specific applications in these four classes.

Diff-Serv is used to tag specific packets for prioritization over a customer's VPN. The tagged packets inform the routers and switches at what priority level the packets should be delivered, says Audrey Wells, senior manager VPN and data services at WorldCom.

Customers decide how they want to divide their traffic among the classes, but a typical setup would put all voice traffic into the first level of service, Citrix and SAP traffic into the second level, e-mail into the third level and HTTP traffic into the fourth level.

While class-of-service support is not new for Private IP customers, the ability to verify that WorldCom is adhering to the Diff-Serv tags customers assign to prioritize their traffic is new with this enhancement.

"Many users say they would be interested in class-of-service support, but they don't like the fact that they can't see if the carrier is delivering the service as promised," Harris says. "Allowing users to track individual applications will offer an additional level of confidence."

With the Private IP Platinum service users can track performance of an SAP application "between two cities or over a specific tunnel across the entire VPN," Wells says.

The upgraded service also lets users view typical performance statistics that can be used to verify service-level agreements. The system also monitors network availability, packet loss and latency across the VPN. Network administrators also will be able to see if a particular user or application hogs network resources at a certain time of day or week, Wells says.

The carrier uses Visual Networks gear at each site on a customer's VPN to gather performance data, which is sent to a central repository stored at WorldCom's Cary, N.C., network operating center.

Performance details, such as network availability, bandwidth usage and packet loss, can be viewed in real time. Customers can view all their Private IP Platinum statistics at the carrier's customer portal site, called WorldCom Customer Center. The system also lets users create daily, weekly or monthly reports.

Despite its bankruptcy and new management, WorldCom is trying to keep up with competitors. But it is not the first carrier to offer this feature. Sprint announced monitoring enhancements in September for its managed frame relay and ATM customers based on Visual gear. But Sprint's service doesn't offer specific application monitoring.

Equant last month launched a service more similar to WorldCom's that is based on gear from Compuware. Equant's service, called Application Visualizer, is available to its IP VPN, frame relay and ATM customers. Equant's system uses probes throughout customer networks to report on 2,900 off-the-shelf applications and is available around the world.

The WorldCom service is available for $110 per dedicated site on top of a customer's typical service fees. The price includes equipment, upgrades, maintenance and monitoring. ■

Private IP Platinum

WorldCom is launching a new version of its MPLS frame relay service. Features include:

- Prioritization based on protocol type.
- Real-time and historical bandwidth-utilization statistics.
- Service-level agreement verification.
- Ability to view network by application, port, IP address, specific user or circuit.

Short Takes

■ **SBC** recently filed applications with the Federal Communications Commission seeking to offer long-distance services in **Michigan** and **Nevada.** Regional Bell operating companies such as SBC must first prove they are giving competitors access to the RBOC networks before they can offer long-distance in a particular state. The FCC has 90 days to rule on the applications. SBC already has won approval to offer long-distance in seven states.
www.sbc.com

■ **Cogent Communications** will launch a **500K bit/sec Internet service** this week to businesses in Cogent's on-net buildings. Cogent already offers a 100M bit/sec Ethernet service, which appeals to about 45% of the companies in its on-net buildings. The 500K bit/sec service, called **Fiber 500,** is designed to compete with DSL and appeal to smaller customers requiring less bandwidth. Pricing for the service starts at $250 per month for a one-year contract.
www.cogentco.com

Metromedia serves up high-speed 'Net plan

■ BY MICHAEL MARTIN

Optical infrastructure provider Metromedia Fiber Network has begun targeting businesses with very high Internet bandwidth demands through the launch of a Gigabit Ethernet Internet service.

Called MFN Metro Gig-E, the offering is aimed at customers requiring at least a DS-3 connection to the Internet, customers who need to burst their bandwidth with minimal latency and those with high-capacity Internet needs who are searching for a second provider.

Customers subscribing to the service will be connected directly to MFN's national IP network through a fiber connection.

"We're taking the metro assets MFN has in dark fiber and leveraging those assets to make connections directly to our IP backbone," says Joe Ramsey, director of product marketing.

Customers must be connected to an MFN metropolitan network to subscribe to the service. If they aren't connected already, they have to pay a one-time fee to build a fiber lateral to their premises.

MFN Metro Gig-E is available in Atlanta, Chicago, Dallas, Houston, Los Angeles, New York, San Francisco, Seattle and Washington, D.C. The MFN Metro Gig-E service starts at $5,000 per month for 100M bit/sec access. Bursting above 100M bit/sec access will be billed on an as-used basis. Additional bandwidth is priced based on volume commitments.

Ramsey says MFN's main competition will be DS-3 lines from traditional telecom providers.

Companies such as Cogent Communications, which offers 100M bit/sec Internet connections to customers in multitenant buildings, won't be competitors because they go after smaller companies, he says.

Metromedia, which filed for Chapter 11 bankruptcy last May, still is working on a reorganization plan. ■

More online!

While Metromedia rolls out new services, it's still pulling itself out of bankruptcy. Get the background on its Chapter 11 filing last year.

DocFinder: 4040

EYE ON THE CARRIERS

Johna Till Johnson

Placing a dollar value on network technology

One of the best questions I've been asked recently is "How do you value this company?"

The context was a venture capitalist asking whether the traditional formula for valuing companies made sense in a particular case. But it got me thinking about the broader question of how to value technology in general and network technology in particular.

Some background: The typical shorthand formula for measuring a high-tech start-up's "value" is based on revenue. As any veteran of the Internet bubble knows, a start-up's value is its subsector multiple (I'll spare you the explanation) times its expected revenue in the anticipated "exit" year, meaning the year the company is expected to be sold.

This handy formula lets you look like a financial wizard without the time and trouble of a Wharton degree.

When asked, you simply squint knowingly, stare off into space and mumble something like, "Ah yes ... the multiple for these types of firms is 3.5.... What was the revenue run-rate last quarter? And the growth? Ah, yes ... the company is worth about $107 million." (Make sure to throw in lots of jargon like "run rate" to create the right wizardly impression.)

Trouble is, we really are in the realm of black magic and arcane arts. This formula, while useful for general benchmarking purposes, has no particular justification. Why should a company be valued in terms of revenue rather than (as my venture capitalist friend asked) a more traditional measure, such as, say, profitability?

Let's expand the question slightly, and maybe make it more relevant (at least for those of us lacking Wharton degrees and investment funds). How do you decide how much money a company should be spending on IT? That's another way of asking the question, "How much is technology worth?" Several models have been proposed; most IT executives are familiar with the concepts of return on investment and total cost of ownership.

My firm uses something called the total cost of service delivery (TCSD), which is similar to the idea of horsepower. TCSD is predicated on the assumption that you don't just deploy technology for technology's sake. You're putting it in place to help accomplish something — to make accounting more efficient, for example.

So you evaluate the effect of technology by comparing it with other approaches, such as hiring more accountants. If two accountants plus a new technology are as efficient as 50 accountants without the new technology, the value of that technology is 48 accountants.

The problem with this approach is that it doesn't fit into a handy formula. And it often makes those of us who deploy it look less than wizardlike, because we don't get to use snazzy jargon. Instead, we ask silly questions such as, "What, exactly, are you trying to accomplish here?"

Forcing people to re-examine their basic premises is never comfortable. One participant in a recent research study of ours informed us that he "didn't answer silly questions." But you know, sometimes the silly questions have the greatest value.

Johnson is president and chief research officer at Nemertes Research, a technology research firm. She can be reached at johna@nemertes.com.

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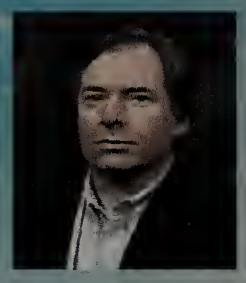

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The Edge

■ SERVICE PROVIDER DEVELOPMENTS AT THE JUNCTURE BETWEEN THE ENTERPRISE AND THE NEW PUBLIC NETWORK

Laurel unveils demand-creation plan

■ BY JIM DUFFY

PITTSBURGH — Edge router newcomer Laurel Networks last week entered the profitable-service/demand-creation plan market with a program designed to chart the feasibility of carrier technology upgrades.

The 3-year-old company unveiled FirstSTEP, a "strategic technology evolution" program providing financial analysis, back-office integration, and device and network validation tools to guide carriers through a technology overhaul at the edge of their networks. The goal of the overhaul is to replace legacy gear with systems — Laurel's ST200 routers — that support packet-based multiservice networking capabilities.

FirstSTEP comes after programs that Cisco and Juniper released to direct carriers through a technology migration that would result in profitable rollout of new services and increased sales of Cisco and Juniper products.

Cisco has been enticing carriers to move from a commodity transport to a value-added services and applications business model, and encouraging cable multisystem operators to encroach on carriers' revenue streams, thereby creating competition and demand for Cisco products. Cisco also has described architectural frameworks — one such framework is called Broadband Local Integrated Services Solution (BLISS) — designed to convince service providers that they can roll out profitable new services by augmenting existing circuit, packet and cable infrastructures with new purchase orders for Cisco products (see www.nwfusion.com, DocFinder: 4034).

Not to be outdone on the conceptual framework front, Juniper announced its own profitability/sales-generation plan called Model for Integrated Network Transformation (MINT). MINT proposes a model whereby service providers generate profit through service customization and added value as they scale their services — through purchase and installation of Juniper products — to address untapped or underserved markets. (see DocFinder: 4035).

Making sense?

Elements of Laurel's FirstSTEP technology-migration plan.

- Multiservice Edge Financial Modeler proves financial feasibility and identifies starting point with maximum ROI.
- PerfectStorm Portable Testbed proves technology under extreme stress in carrier's lab.
- BigBang Integration Lab is customized for each carrier's network infrastructure.
- Laurel Provisioning System AnyOSS Integration Toolkit ties to existing operating support system and management systems.

Now it's Laurel's turn. FirstSTEP is more tangible than BLISS or MINT because it proposes establishing quantifiable and qualitative test scenarios for new technology and service rollouts, rather than concepts.

"It's simpler to grasp," says Mark Bieberich, an analyst at The Yankee Group. "It focuses on four very tangible aspects of the product's [proposal], whereas the other programs seem to incorporate quite a few more aspects of the overall solution."

The components of FirstSTEP include a financial modeler for custom business-case analysis; a portable test bed to put the ST200 through its multiservice paces; a multimillion dollar integration lab to validate the ST200's operation in a carrier environment; and a software tool kit to enable integration with a carrier's existing network management infrastructure.

The Multiservice Edge Financial Modeler quantifies the financial effect of multiservice edge deployment by calculating the revenue, capital investment, operations expenses, service margins and return on investment that can be achieved with the ST200 vs. a traditional multidevice edge configuration. For example, carriers can model "cap-and-grow," greenfield or transition-over-three-years scenarios for a mix of new and existing services with different growth rates, Laurel says.

PerfectStorm Portable Testbed lets carriers perform multiservice edge proof-of-concept test cases on Laurel's ST200 routers. Carriers can validate the scalability and performance of new and existing services, including Internet, ATM and frame relay, quality-of-service-enabled Ethernet, IP VPNs, Layer 2 VPNs and any-to-any interworking between ATM, frame relay and Ethernet, among other scenarios, Laurel says.

BigBang Integration Lab simulates a large-scale, multivendor service provider network and is available to carriers to validate services across a replica of their infrastructure. BigBang Integration Lab tests multiservice edge interoperability with existing core and access networks by simulating a Tier-1 carrier network using test gear and widely installed vendor equipment.

Laurel Provisioning System AnyOSS Integration Toolkit uses Java, Common Object Request Broker Architecture and XML APIs to tie ST200 router and multiservice edge management into the carrier's existing operations support system environment. ■

NextHop updates router software

■ BY JIM DUFFY

MOUNTAIN VIEW, CALIF. — NextHop Technologies, a developer of network routing software, rolled out a new version of its product last week that the company says is designed to enhance network and device management, and reliability.

The company's GateD 10.0 routing code includes an XML API that lets users build customized command-line or Web interfaces and provide a readily accessible script interface, NextHop says. It also lets network administrators lower operational costs and increase the security of managing any network device using GateD 10.0 software, the company says.

For reliability, GateD 10.0 supports recent IETF specifications for graceful, or hitless, restarts. GateD 10.0 now lets a network device continue to forward packets while the routing software is being restarted.

These restarts might be triggered by a hardware failure or be part of a planned process for updating or reconfiguring the software. Graceful-restart capabilities, which are extensions of the three most widely used routing protocols, provide a higher level of network equipment, and public and private network availability and reliability, NextHop says.

A number of vendors have announced and rolled out routing resiliency features such as graceful restart over the past year. Juniper was first, followed by Alcatel, Cisco and Avici Systems (see www.nwfusion.com, DocFinder: 4037).

In addition to the XML API and graceful-restart features, GateD 10.0 software includes enhancements to algorithms in the Open Shortest Path First and Intermediate System-to-Intermediate System protocols to allow for better availability and speed of calculation.

GateD 10.0 is aimed at multiple markets, including the service provider core and edge, and security appliance markets. It is available now. Pricing was not disclosed. ■

Short Takes

■ **Lucent** last week announced it will **resell Cisco routers** to mobile network operators. Under the 3-year, nonexclusive arrangement, Lucent will resell Cisco's **Packet Data Serving Node,** which lets Code Division Multiple Access 2000 operators provide mobile data access to the Internet and corporate intranets and extranets; **Gateway General Packet Radio Service Support Node,** which lets GSM and Universal Mobile Telecommunications Systems operators deploy high-quality mobile voice and data services; and **MGX8000 Media Gateway and ATM aggregation** products, which let mobile operators provision voice-over-IP and voice-over-ATM service on their packet core networks.

Lucent late last year announced plans to establish partnerships in IP/Multiprotocol Label Switching after killing its MPLS core switch, the TMX 880, as part of a product restructuring.

More online!

Get the background on NextHop's earlier versions of GateD and its deal with IBM.

DocFinder: 4033

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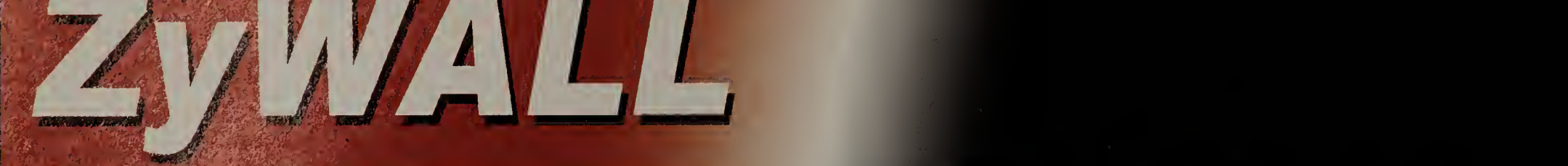

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VPN Tunnels	10	10	1 (5 Tunnel Upgrade $199)	10
ICSA Certified Firewall	Yes	Yes	Yes	Yes
ICSA Certified VPN	Yes	No	No	No
Wireless 802.11b Upgradable	Yes	No	No	No
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Comparison chart data gathered 01/22/03.

ZyXEL

Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

Embedded switching adds reliability

■ BY THOMAS HAMMOND-DOEL

Embedded storage switching technology makes it feasible for storage systems to incorporate 2G bit/sec switched network connectivity within a storage array. Some benefits of embedded storage switching include much higher reliability, better performance and the ability to add drives without degrading performance.

Shared bus architectures are used in the back end of many storage systems, rendering each disk or tape drive within the storage array a single point of failure. This dramatically increases the risk of an entire disk array going offline as the result of a problem with a single drive.

Whether the front end of a storage-area network or network-attached storage system uses Fibre Channel, iSCSI or IP, the storage system controller translates requests from the front end to the back end using the raw Fibre Channel Arbitrated Loop (FC-AL) shared bus protocol.

A new architecture

Arbitration and data flow of legacy FC-AL loops must progress through all devices in the loop. Each device along the path adds latency — and more importantly, an additional failure point that reduces reliability.

Legacy FC-AL loops operate through the mechanism of the controller, first arbitrating for control of the loop and then sending a command to a drive to prepare for data to be written to the drive or to request data from a specific location.

Back-end switching, however, uses the FC-AL protocol in a switched fashion, bringing point-to-point connectivity to each individual drive.

Embedded storage switching combines the crucial elements of complete integration of a crossbar switch core, embedded serializer/deserializers, 1- and 2-gigabaud bandwidth capabilities, and diagnostics to a single switch on a chip.

Storage systems physically arrange several disks into a single enclosure known as a Just a Bunch Of Disks (JBOD). Before the availability of the new level of integration brought by embedded storage switches, placing switching within a JBOD was impractical in modular storage systems because of real estate, power, heat and pricing issues. When embedded storage switching is added to a JBOD it becomes a Switched Bunch of Disks (SBOD).

Now when an initiator arbitrates for control of the system, instead of the arbitration proceeding through all the devices, such as in a shared bus architecture, the arbitration goes only to the switch matrix and back to the initiator. The process is very fast and greatly reduces system latency. After the initiator gains control, it can open the target drive and begin communications. Data packets sent between the initiator and drives are now point to point, and multiple conversations can take place at the same time (see graphic).

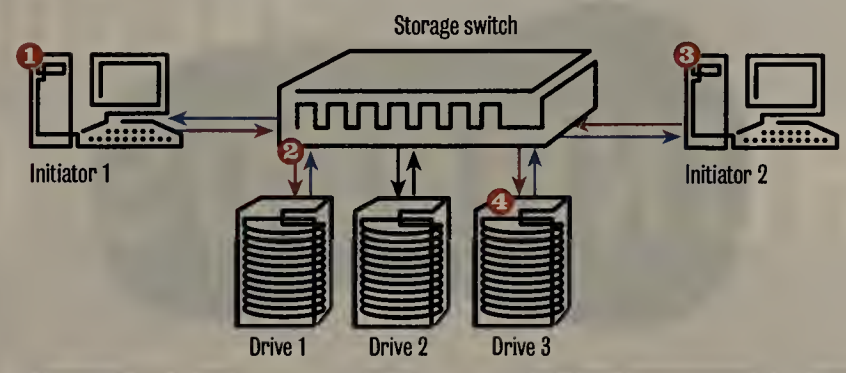
Got great ideas

■ *Network World* is looking for great ideas for future Tech Updates. If you want to contribute a primer on a specific technology, standard or protocol, contact Amy Schurr, senior managing editor, features (aschurr@ nww.com).

Embedded storage switching

■ HOW IT WORKS

Embedded storage switching boosts storage system performance and reliability by replacing a shared-bus architecture with point-to-point connections.



1. Initiator 1 requests communications with Drive 1.
2. Drive 1 opens a direct connection to Initiator 1, and the two begin transferring information.
3. At the same time, Initiator 2 requests communications with Drive 3.
4. Drive 3 opens a direct connection to Initiator 2 and begins a second, concurrent transfer.

Whether an embedded back-end switch provides connectivity from a controller to several JBODs or all the way to the individual hard disk drive using SBODs, embedded switching enables continuous reliability, availability and serviceability.

Embedded switching gives IT managers tools to deploy automatic maintenance, monitoring and repair. Each embedded storage switch port retimes the low-level signal, increasing signal integrity and reducing system jitter. Back-end embedded storage switches are in the ideal position to monitor traffic and signals, and to diagnose problems.

IT managers can establish policies at the highest level and be assured that those policies flow down to the lowest level of a storage system, where back-end embedded storage switches can implement them. For example, you might set a policy to automatically remove a hard drive upon detection of a failure trend, such as an increasing number of cyclic redundancy check errors over time.

Embedded storage switching technology removes the performance bottlenecks that a shared-infrastructure storage system implementation imposes. All current topologies benefit from some aspect of back-end switching, where performance varies depending on the loading profile — from videostreaming to data-warehousing applications, and from lowered storage system cost of ownership and storage system automation.

Hammond-Doel is technical marketing director for Vixel. He can be reached at tom.hammond-doel@vixel.com.

Ask Dr. Internet

By Steve Blass

You recently said one could probably not run an FTP site with no public IP address inside an apartment complex. You can use software at www.no-ip.com or set up an automated system that updates a link on a Web site with the correct IP address. We are doing something similar via a DSL modem and a computer. We use Open Domain Server, which lets us have a subdomain on one of the domains supported by them, and we run a program locally called DynSite that keeps ODSs servers updated with the IP address assigned to us by our ISP. Did we miss something?

My point was that a properly configured firewall at the Internet boundary could block inbound FTP connections regardless of how someone configured the PC FTP server. If the firewall is not blocking the inbound traffic, the solutions you describe can work. The idea is to provide an unchanging Internet link that is kept updated with the changing Internet IP address of the FTP server. You can handle this with scripts or using the tools you mentioned. Another way to identify your Internet-visible IP address is by looking for the REMOTE_ADDR line in the output from www.nwfusion.com, DocFinder: 4039.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.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GEARHEAD INSIDE THE NETWORK MACHINE

Mark Gibbs

Your thoughts and MP3 tools

Over the past few years of this column's existence it seems that you, dear reader, like what we have to say. In the last few *Network World* readership polls you've rated this "the most useful column" as well as "best dressed" and "most likely to get down and party" (OK, so we made up the last two).

Anyway, with such kudos in mind and here, not far from the start of 2003, it seems a good time to ask once more "How are we doing?" From the e-mail messages you send it seems that we're successfully addressing technical topics you are interested in and at a level you like. The categories we've tackled:

- Tools and utilities.
- Standards.
- Product reviews.
- Programming.
- Tips and techniques.

So, given that background, here are our questions for the future:

What are the hot topics and technologies that you'd like to see covered in future Gearhead columns?

What level of detail are you looking for in each topic: summary, analysis, primer or soup-to-nuts?

What don't you like?

While you cogitate on that and get ready to let us know your thoughts at gear head@gibbs.com, this week we'll look at a couple of MP3-related tools we stumbled across over Christmas that have impressed us.

MP3 management

First, there's a tool we now cannot live without — MP3/Tag Studio published by Magnus Brading (www.nwfusion.com, DocFinder: 4030). This software is the answer to every digital audiophile's problems.

MP3/Tag Studio works with MP3 files that you can select individually or by whole directories, directory trees or custom selections. It can read ID3v1.0, ID3v1.1 and ID3v2 tags (MP3 "tags" are information embedded in MP3 files about artist, album and title) and fix poorly tagged files. It can even copy data from any tag format to any other tag format.

You can set tags based on parsed filename and directory path name and you can define more-or-less any possible splitting of strings into tag fields. You also can rename files based on tag data and create simple or complex subdirectory structures based on tags and or filenames.

Because these operations can be complex, a simple mistake in, for example, specifying how to rename files could result in chaos. Because of this, MP3/Tag Studio has a preview mode so that you can check what the result of your transformations will be before they are written to disk.

MP3/Tag Studio . . . is the answer to every digital audiophile's problems.

This is a fantastic tool for organizing that vast, completely legal collection of MP3s you've acquired. It is available as nonexpiring, uncrippled shareware that costs only $19 to register with free updates forever!

While getting your MP3s organized you also might like to create mixes — groups of tracks related by tempo, energy or whatever. Now, if you've ever gone through a large collection of MP3s trying to build the perfect workout or party mix, you'll know this is hard work. We just discovered MoodLogic published by MoodLogic, Inc. (DocFinder: 4031).

MoodLogic provides you with information about the artist, song tempo, mood, year and genre. It does this through a huge online database that has been built through collaborative filtering — in other words the result of thousands of users providing the data and analysis of each track. Given a small amount of information from a filename or MP3 tag, MoodLogic can look up details of a track and fix the MP3 tags to make them as accurate as possible!

Once you have shown MoodLogic where your MP3 files are and had them examined and cross checked in the MoodLogic database, you can create mixes by selecting any or all of the attributes. For example, you might want to create a mix of jazz tracks from the 1970s and 1980s with slow to moderate tempos and with a mellow feel. We tried MoodLogic and built a workout mix that was really good! At $30 this is a terrific value.

So now that we've got our MP3s organized we can get down and get funky. Next week, back to serious network stuff.

Cries of "All that scratchin's making me rich" to gearhead@gibbs.com.

CoolTools

Quick takes on high-tech toys

By Keith Shaw

Two quick peeks at cool stuff

With the holidays over and the Consumer Electronic Show 2003 out of the way, we had some free time to do some quick reviews. Here are two products that graced the Cool Tools testing cube over the past few months:

Mobile-Trends cell phone necklaces

OK, there's nothing remotely electronic about these accessories, but they're pretty cool anyway. We've been fumbling with our cell phone recently when it's been ringing, and it's always stuck in one pocket or another.

Mobile-Trends has a variety of different cell phone necklaces that attach to your phone so you can then wear them around your neck. The three models include the Cell Cord Original (a basic cord), the Cell Cord Plus (cord plus headset attachment and a call/answer button), and the Cell Cord Zipper (a more durable strap with a zipper that lets you hide an existing headset cord).

The Cell Cord Plus lets you wear your cell phone and use a hands-free headset.

Mobile-Trends says many new phones are coming out with "cell cord ready" attachments that let you connect the necklaces easier, but if you have an older phone you can still use these. Each necklace comes with an adapter that you can stick on to the back of your phone. Prices range from $15 to $25.

Smaller cell phones would likely feel better strapped around your neck — if you have an older, heavier phone you might feel weighted down. On the plus side, you no longer have to figure out where your phone is when the call comes in.

NetGear CG814M puts a cable modem, a 4-port router and a wireless access port into one box.

Cable modem and more!

Netgear sent us its new cable modem gateway (CG-814M), which puts a cable modem, four-port router, firewall and wireless access point (802.11b) into one package. With this device, we extended our home network in any room in the house that had a cable connection. Sure, we could have gone out and bought another cable modem, but the CG814M gave us a cable modem, four Ethernet ports, a wireless access point and Internet firewall features.

Setup was simple. The box came with a CD-ROM that had a good wizard to help us install the correct cables in the device (and in the correct order). Configuration of the gateway is handled through a Web browser. This method was familiar to us, having previously installed several routers/gateways in the home network. However, general network knowledge probably is needed to install this (the configuration wasn't perfectly user-friendly — we had to dig around some of the interface screens to find certain tasks). On the plus side, the graphical user interface provides online help that assists with descriptions of networking terms.

Since we receive dynamic IP addresses from our cable company, the device just grabbed another one for us for Internet access. It has a Dynamic Host Configuration Protocol server that assigns local IP addresses for any devices (either wired or wireless) on your LAN. We also quickly accessed the corporate VPN through IP Security support without much hassle. Other features include stateful packet inspection, an intrusion-detection system (logging, reporting and e-mail alerts), and Web URL content filtering.

The CG814M costs $280 (but you can find it online for about $230), and is available now.

Shaw can be reached at kshaw@nww.com.

opinions!

EDITORIAL
John Dix

Managed service myths

With budgets still tight, it is a safe bet that more than a few of you intend to look into managed services as a way to save money and safeguard valuable resources in this new year.

Pundits herald managed services as the future, arguing that it makes sense for carriers to assume the job of caring for things such as routers and security devices, letting you focus your limited money and staff resources on core competencies.

But users who have examined managed service options say it isn't as simple as that. There are a host of pitfalls:

- Leaving the driving to others doesn't always amount to savings, despite upfront promises. Once you get done checking off the options you want and the service levels you expect, you can end up close to where you started.
- If you're going down this path because of staffing issues, you have to be careful you get what you bargain for. A carrier might indeed have a person on hand at 2 a.m. to meet its 24-7 coverage guarantees, but can that person do anything more than answer the phone and log the trouble ticket? Says one banking customer who was considering this option: "We found after-hours crews rarely knew how to get into a device and fix it."
- While managed services can be effective for static environments, if your environment changes much, the process of managing the service provider can become more complicated than it is worth. Take security management. It's no secret that intrusion-detection systems generate reams of false positives, but can you risk a third party making decisions about what is real and what is dangerous? What if it accidentally shuts down a critical link? If you have to be involved in most of the decisions, it doesn't represent much of a gain.
- Carriers often outsource components of their managed services. One of the largest companies in the business is said to rely on a third party for the security in its managed VPN service. So what are you buying? And who are you dealing with when problems arise? As one reader said, some carriers are becoming service brokers rather than providers of homegrown, integrated offerings.

This isn't to say, of course, that you should turn your back on managed services. As the technology evolves some of the mystery evaporates and you can more comfortably offload the care and feeding of certain elements to a third party. The trick is discerning what and where this is possible. The lesson from people who have looked closer is, do your homework carefully.

— John Dix
Editor in Chief
jdix@nww.com

Targeting providers, not users

Your review of SilverBack Technologies' InfoCare 3.5 (www.nwfusion.com, DocFinder: 4022) misses the main use of the product. Service providers use InfoCare to deliver a remote managed service; it is not installed and maintained by end users. Your story did not explore the power InfoCare gives providers to support many end-user networks from a single Web interface. You also compare InfoCare with products that can cost five times as much. Cost must be a consideration when comparing products.

Jim Hare
Vice president of business development
SilverBack Technologies
Mahwah, N.J.

The myth of five nines

Regarding your ISP backbone performance test (DocFinder: 4023): Thanks for this extremely important report. However, the main impression people are going to receive (debunking the myth of five nines) is, unfortunately, wrong.

First, the experiment was only on the core. Unfortunately, no user has access to the core. The access network is, of course, much worse.

Second, looking at the numbers, you see that the real uptime is between 91% (Cable & Wireless) to 99.696%. Only when the providers exclude the times when they know they are in trouble do they get their high numbers.

In addition, several ISPs opted not to participate. You can bet they knew that they were not going to get even close to 99%. AT&T pretty much told you that they were only guaranteeing 70% uptime.

The bottom line is would you agree to a phone service that works 100% of the time, except when they purposely deny you service at random intervals? No. If anyone dialed 911 and didn't get through because the phone company was doing maintenance on its switches, that phone company would be held liable.

All in all, this report does a great job of showing how far the Internet is from five-nines performance. Until we get end-to-end, five-nines uptime, as well as delays and packet delay variation that support true toll-quality Internet telephony, the public switched telephone network is not going away.

Yaakov Stein
Chief scientist
RAD Data Communications
Tel Aviv, Israel

Regarding your ISP core test: If you are going to allow the ISP to define a maintenance window, why bother to do the test at all? The network needs to deliver my packets when I decide to send them, not when the ISP thinks I should.

At least your story did correctly title the section, "The myth of five nines." When I worked on telephone company equipment, everyone understood that the reference available time was wall clock time, not some artificial "up" time for the network made popular by data equipment vendors.

Eric Hildum
Santa Clara

Test author David Newman replies: You make a great point about customers' ability to send packets at will, not just when the provider says so. That's why in a graphic we showed how much maintenance time each provider used, not just its availability during normal operations. As for the definition of uptime, the telcos use wall clock time to assess uptime of elements, but they do not use that method to describe availability of entire networks. For voice or data, I have yet to see a service-level agreement that doesn't allow for some maintenance period on the provider's part.

E-mail letters to jdix@nww.com or send them to John Dix, Editor In Chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

More online! **www.nwfusion.com** Find out what readers are saying about these and other topics. **DocFinder: 4021**

TOTALLY UNPLUGGED

Ira Brodsky

Scale grid computing down to size

Grid computing captured imaginations by creating 'Net-based virtual supercomputers out of hundreds of thousands of existing computers. But like many big ideas, grid computing is fraught with challenges, and the best opportunities might prove quite different from what pioneers envisioned.

The technical benefits of aggregating the computational power of computers residing on the same network are clear. But the business benefits must be weighed against concerns such as cost, security and manageability.

There are three radically different types of grid computing: 'Net-based, enterprise and supply-chain.

From the outset, visionaries targeted the most distant of the three: leveraging the Internet as a source of unprecedented, on-demand computational power. For example, Platform Computing's distributed computing software was used to link 70,000 computers via the 'Net to map, classify and compare more than 500,000 proteins (the Decrypthon Project).

There are two obvious drawbacks to 'Net-based grid computing: It is voluntary and vulnerable to the usual Internet plagues. Perhaps someday users will be able to rent processor time over the 'Net, but first someone must figure out how to compensate the sellers and indemnify the buyers.

Fortunately, there is a more practical and urgent need for grid computing: satisfying the computational requirements of industries such as life sciences research, financial services, and oil and gas exploration.

Still, there are competing visions of grid computing. Grid computing vendors point out that most of a company's computational power is wasted. But is that a sufficiently compelling reason to implement grid computing? Companies that search for oil or new drugs accept some inefficiency and waste as part of the cost of doing business.

Companies that rely heavily on computational workflow are the best candidates for grid computing, although even in these cases it is more a matter of better systems integration than recovering every last processor cycle. The need to integrate server farms across select departments is far greater than the need to optimize enterprisewide PC utilization.

Supply-chain grid computing is a giant step above enterprise grid computing and a small step below 'Net-based grid computing. Supply-chain grid computing will facilitate collaboration between business partners, but it requires security and management tools that don't exist. Ensuring security and performance when you have end-to-end control is hard enough; doing so across corporations is nearly impossible.

With big ideas, customers are expected to take leaps of faith. Grid computing will succeed by letting specific industries create grids spanning specific departments.

Rather than tying together all the computers in a company at once, they will accomplish the same thing gradually. Eventually, "grid computing" and "networking" will be synonymous.

Brodsky is president of Datacomm Research Co. of Chesterfield, Mo. He can be reached at ibrodsky@datacommresearch.com.

. . . grid computing is fraught with challenges, and the best opportunities might prove quite different from what pioneers envisioned.

YANKEE INGENUITY

Howard Anderson

Self-abuse: Talking to myself

In my own head recently I've been having the following conversation with myself:

Me: "Howard, you idiot, how did this telecom meltdown happen on your watch, and why didn't you warn us?"

Howard: "I did warn you. I told you that there was no way that 300 competitive local exchange carriers could succeed. I told you that the entire industry was supported by junk bonds. I told you . . ."

Me: "You also told us that applications would soak up the extra bandwidth because they always had. You told us that companies would build new products and create virtual malls, and that consumers would use all of this bandwidth to send music, video and interactive games back and forth to one another!"

Howard: "They will, they will. I just didn't say when."

Me: "That answer won't hack it here. You and your ilk started to drink the Kool-aid; you actually believed that demand followed supply."

Howard: "I'm sick of all this postgame b.s. — it's time to think about where the industry is going. Did you notice Verizon is the nation's No. 3 long-distance carrier if you measure by number of households? They have about 10 million households vs. 8 million for Sprint."

Me: "Big deal. We all knew this was going to happen sooner or later. Five years ago The Yankee Group said that the regional Bell operating companies would get 20% of the long-distance market — and they are. But so far none of the RBOCs are making real headway in the enterprise market. But you also said that AT&T and MCI would continue to take share from the local market. Still feel that way?"

Howard: "Yes and no. AT&T is gaining share, and the RBOCs are losing access lines left and right. It looks like the Federal Communications Commission is moving to stabilize the industry — if only to protect it from itself. Which means that the prices for the network elements are going to go up, and the long-distance guys are going to find it isn't quite so easy to make money in this business."

Me: "There you go with the 'yes and no' crap. What I want to know is even if competitors find it harder to buy and resell, will the equipment market recover, and will the remaining carriers start buying soon?"

Howard: "The FCC wants it both ways. . . . It wants to 'save' the industry but it also wants to see innovation and free markets. No one in their right mind is going to rewire America for another local carrier when it's going to cost $2,500 or $3,000 per home."

Me: "Look, the choice now is either an RBOC or an RBOC clone in the local market. Will we really see competition from a different sort of competitor — such as cable or Internet telephony or cellular?"

Howard: "You already are. Forget the fact that any business that puts in Internet telephony is putting itself at risk because the stuff still doesn't work well enough. Cox Cable and Comcast are overbuilding. The intent of the Telecom Act was to use the local telephone companies' infrastructure temporarily until competitors could build their own facilities."

Me: "And what happened?"

Howard: "Well, the venture capital industry doesn't have the money or guts to do this; investment bankers couldn't raise more money for these companies, and Europeans had enough problems with their 3G debacle. The only ones left were the cable guys and maybe, under some circumstances, AT&T — and even then only on areas where the volume made it a make vs. buy decision."

Me: "I'm still holding you personally responsible for the $3 trillion loss in telecom and for not blowing the whistle on this. You knew in your heart of hearts that there was no way in hell that this industry could absorb all the capacity that came online in the late 1990s and the first few years of this decade."

Howard: "Mea culpa."

Anderson is senior managing director of YankeeTek Ventures, a Cambridge, Mass., venture capital fund for early-stage technology companies. He can be reached at handerson@yankeetek.com.

The FCC wants it both ways. . . . It wants to 'save' the industry but it also wants to see innovation and free markets.

Tips from the trenches on VoIP

Based on our testing, here's how to prepare your network for VoIP.

BY KENNETH PERCY AND MICHAEL HOMMER, NETWORK WORLD GLOBAL TEST ALLIANCE

In a voice-over-IP deployment, the hotspots aren't as obvious as you might think. The clear-cut decisions center on VoIP-specific products such as IP phones, IP PBXs and voice gateways, but weaknesses in your data network will become magnified when you introduce VoIP.

The first question to ask in order to avoid some postdeployment surprises is: In what kind of shape is my existing network? Real-time voice traffic will be affected by any bottleneck on the network. A delay of 1 second in retrieving a data file from a server because of congestion might be barely noticeable to the user, but add just 50 millisec of delay on a phone call and it's the difference between high-quality and very poor-quality voice communications.

Before deploying any VoIP gear, you must scrutinize your network with an audit that includes three primary considerations:

• Utilization and network statistics. Maximum, minimum and average metrics for bandwidth consumption, latency, jitter and packet loss should be included in your audit.

In the case of bandwidth utilization, the hotspot for potential bottlenecks lies in the interswitch links that make up your backbone. Maximum bandwidth utilization should be dictated by failover considerations, says Joe Tomasello, of Foundry Networks.

"Uplinks should always be deployed redundantly, at least," Tomasello says. "If one link fails, the other link should be able to handle the load for both links. Therefore, utilization on a trunked Ethernet uplink, for example, should never exceed 50%."

Latency, jitter and packet loss that would be detrimental to business-quality voice are rare occurrences on today's LANs. Where they do exist, they are usually the result of antiquated equipment (such as hubs, 10M bit/sec Ethernet switches or switches with low memory capacities) or silly mistakes. Examples would be a switch with its autonegotiation algorithm disabled, forcing all switch ports to default to 10M bit/sec half-duplex communications; or a swath of Ethernet cable that's a lot longer than 328 feet, the maximum supported Category 5 cable length for Ethernet.

Check that your network latencies don't exceed 100 millisec, and maximum jitter should never be more than 40 millisec. Packet loss should be zero, but the rule of thumb for tolerable voice quality is less than 1%.

• Review of infrastructure elements. The gear that powers the network should be reviewed for necessary feature support and correct configurations. Ethernet switches that will be touched by VoIP traffic should support virtual LANs. This will allow segmentation and isolation of your voice traffic across the data network.

IP-based quality of service (QoS) — such as type of service (TOS) or Differentiated Services (Diff-Serv) — should be supported. In a large VoIP deployment, this allows prioritization of packetized voice over more delay-tolerant traffic that must travel multiple subnets in a routed environment. A few IP PBX systems also require multicast support.

Next, these features should be reviewed to ensure that they're turned on, and to ascertain whether any configurations could pose problems. For example, if the Spanning Tree Protocol is enabled, changes in the Layer 2 topology could cause outages of up to 60 seconds

while the updates are made to each switch's database.

• Estimating bandwidth requirements. Most value-added resellers and integrators have tools to help you ascertain how much voice traffic is currently carried by your voice network, both incoming and outgoing, on a per-station basis. If you prefer to arm yourself with your own calculations, there are two places to go for guidance. The first is to your existing PBX system. Most have reporting capabilities that yield utilization information. Some are easier to get at than others, but the utilization information you need — both station-to-station and station-to-trunk — should be there. The second is www.erlang.com, a Web site full of calculators and tutorials on voice traffic utilization.

When translating voice-utilization statistics into bandwidth requirements, we use the following rules of thumb for base, worst-case LAN bandwidth calculations. First, go with a G.711 coder/decoder (codec), because it consumes the most bandwidth and provides the best voice quality. For packetization rate — or the amount of voice payload per VoIP packet — assume 20 millisec, the default setting on most IP PBX systems. Using G.711 with a 20-millisec packetization rate, bandwidth utilization rounds up to 88K bit/sec per voice conversation. In calculating a worst-case, busy-hour scenario, assume that one out of every four users will be on the phone simultaneously.

In a 1,000-user IP voice system, multiply 250 (for the number of concurrent conversations) by 88K bit/sec per station for an additional bandwidth requirement of 22M bit/sec on your LAN.

The situation is far more complicated on the WAN.

There's no single rule of thumb for calculating bandwidth per call over a WAN because consumption varies by which voice coders (vocoder) and WAN protocols are used. Among low bit-rate vocoder options, G.729a is preferable. Repeated tests in our labs confirm this codec delivers the highest voice quality.

Voice Activity Detection (VAD) — also known as Silence Suppression — should be supported for each vocoders on the IP-PBX you select and, for purposes of calculating bandwidth, assume that it is enabled. With VoIP, speech and silence are packetized. To conserve bandwidth, VAD prevents "silence packets" from being transmitted. While the conventional rule of thumb is a 35% savings, our testing has seen bandwidth savings of 50% when VAD is used.

Assume the same 20-millisec packetization rate and, again, a 4-to-1 user-to-channel ratio.

For example, assume the use of frame relay as our WAN protocol, and G.729a vocoder. Plugging in the other variables outlined above, VoIP bandwidth over a frame link — with 35% bandwidth savings using VAD — rounds up to 18K bit/sec per VoIP conversation. So again, with 250 VoIP station users on the phone simultaneously as your worst case, assume you need an additional 4.5M bit/sec of bandwidth on your IP WAN.

One more tip concerning WAN bandwidth is to find out if your router supports RTP header compression. The standard IP/User Datagram Protocol (UDP)/RTP header consumes 40 bytes in a packet. If supported by your router, enabling RTP header compression can reduce the header information to just 2 bytes, yielding an overall bandwidth reduction of up to 50%.

Once you determine how much VoIP data will likely be running across your network, you can focus on the network it will be touching to accommodate it.

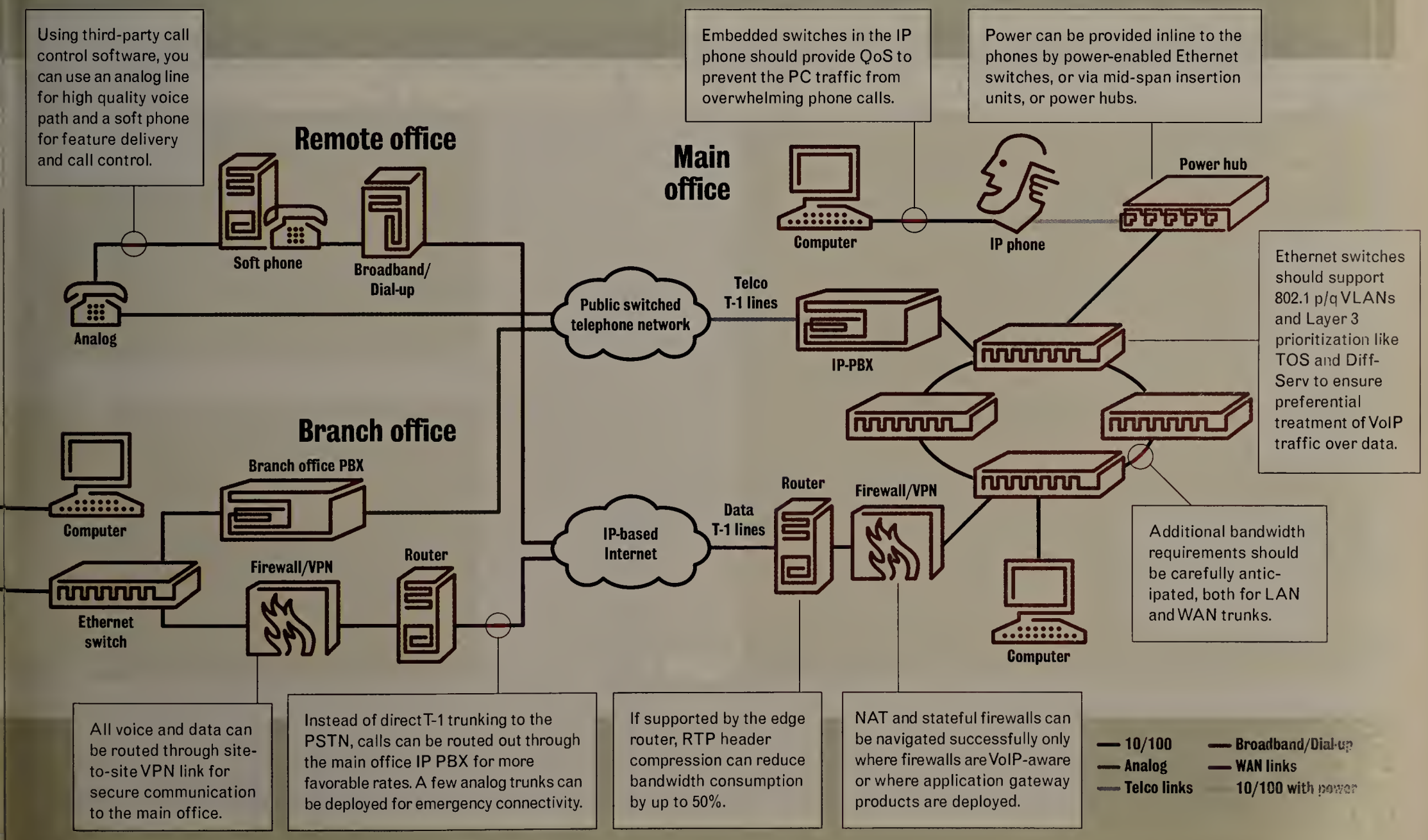
VLANs and QoS: Gotta have it

A successful VoIP deployment requires VLAN and QoS capabilities at every point on the network, necessitating more intelligence in closet switches than ever before. In a best-practices scenario, all voice traffic should be isolated on a Layer 2 VLAN dedicated to voice and signaling traffic.

Switches also should support Layer 3-based QoS features, such as TOS or Diff-Serv, for prioritizing traffic through multiple subnets. This is particularly important

Prepping your data net for voice

Every point on your enterprise network will need some attention in order to accommodate high-quality voice transmission.



at aggregation points within the network. QoS will ensure that the VoIP traffic gets top billing at congestion points and help to maintain low latency and jitter. Setting the exact QoS value for TOS or Diff-Serv would be handled on a case-by-case basis and would depend on what the network looks like and what other traffic might need to be prioritized.

But prepping for voice-specific VLANs and QoS capabilities doesn't stop at your network switches. IP phone support for 802.1p/Q VLAN tagging, or the ability to "tag" packets coming out of the phone that defines membership in a particular VLAN, also is necessary. Phones should come with the ability to set TOS or Diff-Serv priority bits within the packets' IP headers.

The new breeds of IP phones enable "one-wire-to-the-cube" installations, supporting two-port mini-switches on the backs of the phones. The Ethernet connection from the LAN attaches to one of these switch ports. The other connects to the PC, positioning the phone directly inline between the PC and the surrounding LAN. Both data and voice, then, can access the network over the same 100M bit/sec pipe.

To prevent PC traffic from overwhelming voice conversations, most phones include some kind of traffic-shaping mechanism in the switch. For this reason, phones with hubs in the back —- rather than switches — are less desirable. Hubs operate at only half-duplex, minimizing bandwidth to the cube, and they cannot implement QoS.

Inline power over Ethernet: Gotta get it

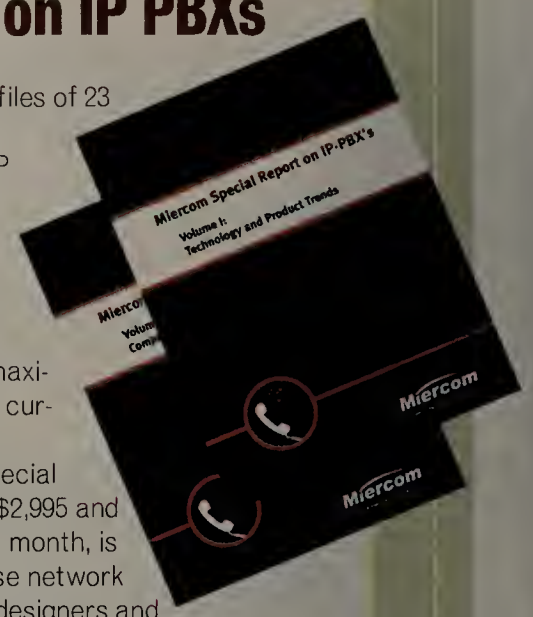
In a VoIP environment, you can look to good old Ethernet to provide an important new functionality over and above a data link — delivering power inline to IP phones. There are essentially two options for delivering power over Ethernet.

First is to purchase Ethernet switches that deliver data and power. Avaya and Cisco are examples of vendors that sell Ethernet switches with inline power. (See inline power primer at www.nwfusion.com, DocFinder: 3839.)

The second is to provide midspan power insertion devices called "power hubs." Most power hubs are OEMed from the Israeli firm PowerDsine. Ethernet cable runs from the cubicles are connected to the power hubs, which are patched to the Ethernet switch. So a 48-port power hub, for instance, will

See VoIP, page 52

Miercom offers new special report on IP PBXs



The IP PBX market is young, vibrant and often confusing. Miercom's new special report is a must-read for anyone considering a voice-over-IP deployment. The report provides insight into the ins and outs of VoIP, vendor strategies, various vendor architectures and the critical questions that you should answer before you make a move toward an enterprise VoIP deployment.

The information contained within the special report on IP-PBXs is based on primary research Miercom conducted in fourth quarter of 2002. This two-volume special report includes comprehensive information on 23 IP PBXs from 15 vendors.

Specifically, the report includes sections on:

- An overview of IP PBX technology.
- A review of current IP PBX market and technology trends.
- Comparative profiles of 23 IP PBXs.
- A discussion of IP PBX performance, including latency, voice quality, availability and security.
- An overview and analysis of IP PBX maximum capacities and current pricing.

The two-volume special report, which costs $2,995 and will be available next month, is targeted at enterprise network managers, network designers and implementers, IT product managers and telephony consultants. Go to www.nwfusion.com, DocFinder: 4026, for more information.

Readers respond: Give us our telephony features

Survey says nine features offered by traditional PBX systems are a must for VoIP deployments.

In a recent Tester's Choice column (www.nwfusion.com, DocFinder: 3845) we turned to our readers to help settle an argument about which telephony features they wanted to see carried over from traditional TDM-based systems into the new generation of IP-based telephony.

Of the 68 respondents to our online survey, 35% were IT/MIS managers, 25% general managers, 15% sales personnel and 10% telephone company personnel. The majority — 59% — worked in companies with at least 1,000 employees. Just more than half had TDM-based systems, while 40% already had installed IP-based systems. The remaining 9% didn't know what type of PBX was installed on their premises or did not answer the question.

We asked the respondents to rate the 50 telephony features from 1 to 5 with 1 being "never even heard of this feature" to 5 indicating "use it daily or consider it vital."

On the most-wanted feature list were support for intrude, call forward all, message waiting indicator, night service, call return, call hold, auto call back, call block and call drop. Each of these received a rating of 4.5 out of 5.

It was no shocker that commonly used features, such as call waiting, call forwarding and automatic callback, scored high. But we were surprised to see features such as intrude, which lets specific users intrude on calls in progress, and call drop, which allows termination of a call without hanging up the receiver, to be in high demand.

But beyond this rather narrow list of nine features, the remaining 41 all were rated an average of a 3.5 on the scale, which indicates that these features were used — not daily — and were not especially vital.

We were surprised that features such as intercom phone-to-phone, audible message waiting, and direct transfer to voice mail landed lower on the list.

In the top five feature tally, call transfer, conference call, call forward all types, call hold and message waiting indicator, repeatedly headlined the list.

We also asked respondents what they consider the most basic telephone features. Not everyone took advantage of this opportunity, but those who did brought up some very good points. Several comments focused on our list of features.

Our list focused on station-side features and did not fully address the back-end system.

Many respondents disagreed with some features we considered basic, wanting to include others they deemed more worthy. This was particularly true for the IT/MIS managers answering the survey, who were more interested in some of the back-end administrative features than those targeted to the end user.

One respondent noted that having to adapt to a smaller feature set supported on an IP PBX forced his company to adapt the way they did business to what the phone system supported, rather than the other way around.

Thus, our goal of defining a universally accepted list of 50 definitive telephone features remains elusive. For those of you who haven't yet taken our survey, go to www.miercom. If we get at least 100 more respondents, we'll report back.

— Michael Hommer

More online!

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DocFinder: 4027

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Dell PowerConnect 3248 Outperforms the Cisco Catalyst 2950 and 3COM SuperStack 3 Switch 4400 by up to 47% in Layer 2 Throughput Tests.[71]
Tolly Group Report #202149
– September 2002

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VoIP, continued from page 50

power 24 IP phones.

Most IP phone interfaces are "power aware" to receive power via the Ethernet connection. Power is sent over the unused pairs of a Cat 5 cable or over the same pairs (phantom power) used for data, in which case the Ethernet power sources employ a detection algorithm to determine whether to send power to a connected interface.

Those few IP phones today that do not have power-aware Ethernet interfaces can use a power hub and maintain the one wire to the desktop. They usually ship with special line splitters, or "pig tails." These line splitters have a female RJ-45 connector on one end to receive the powered Ethernet, branching out into two prongs. One is a DC power connector for the phone, the other is a male RJ-45 Ethernet connection to the phone. Power is effectively "peeled off" the incoming Ethernet connection and sent to the phone's DC power jack. The data goes to the Ethernet port.

Determining whether powered switches or midspan insertion is better is a matter of cost. If you need more switches, or those you have need replacing, you might as well go with powered switches.

Because power failure to your Ethernet switches will leave your company unable to communicate via voice or data, back-up power for your Ethernet switches should be closely examined.

Legacy digital phones sets are terminated at the PBXs, so UPSs for the PBX protect the phones and the PBX. IP station connections terminate at the Ethernet switches. If power to the switch is lost, loss of both voice and data could occur. Upgrading UPSs to prevent longer blackouts also might become necessary. The ratio of necessary switches to UPSs depends on the size of the UPS. Most major UPS vendors provide resources to determine which model UPS a user should get based on the load and the duration of coverage.

Security: Gotta foil eavesdroppers

Security issues have always been a standard refrain for VoIP detractors, and with good cause. Lest we forget, VoIP is data, with all its vulnerabilities. But, while security at the network's edge is always the prevalent concern, we also warn that you have to look inside for security concerns with a VoIP deployment.

Treat your IP-based PBX with at least the same diligence as you would any mission-critical server. Defining VLANs and enabling security features on the switch that map specific media access control addresses to specific ports is a good start. In large implementations, install a dedicated internal firewall to protect the PBX.

Perhaps the most dreaded form of deviant behavior facilitated by a VoIP platform is eavesdropping. TDM-based PBXs sit on physical isolated networks, and they use highly proprietary digital signaling. While conversations can be tapped and recorded, both require physical access to the PBX or physically splicing phone lines.

With VoIP, off-the-shelf packet sniffers can capture conversations and not only replay them, but also store and distribute them as electronic files. VoIP equipment vendors are beginning to add security features to encrypt media streams. For example, on its S8700 Media Server and G600 Media Gateway, Avaya has added Media Encryption on an active IP call. When nonauthenticated users attempt to intercept the packets, they hear white noise when replayed.

While it obviates the economies converged networks can produce, some IT administrators take security concerns so far as to run parallel physical networks for voice and data rather than run both across the same links. Customers with the budget for it can achieve the best of all worlds from a security point of view. But this option is expensive, and tight security can be achieved with a well-conceived deployment.

The edge: Gotta get around NAT

An important fundamental aspect of VoIP is that there are two different data paths: the signaling path and the voice path. When a PBX-attached IP phone goes off-hook, it signals the start of a call-setup process. In most IP PBX systems, the back-end call server will set up, tear down and peripherally monitor call states. But the packetized voice conversation occurs directly between the endpoints (peer-to-peer) without further back-end intervention.

This characteristic makes network address translation (NAT) a troublesome proposition because signaling comes from one network node (the call server), and the media stream comes from another (IP phone). This problem is compounded because NAT functions at Layer 3. Peer-to-peer voice communications occur via the Real-Time Protocol (RTP), which embeds the source and destination IP addressing in the Layer 7 headers, rendering the return data address inaccessible to any NAT engine.

Stateful firewalls are equally problematic. Outbound VoIP communications create "pinholes" through the firewall to allow outbound voice communications. However, inbound voice data will attempt to enter the network using different socket information than the signaling data used, and the firewall will consequently block the RTP stream. Furthermore, creating pinholes for all the possible port ranges negotiated by the endpoints defeats the firewall's purpose.

One possible solution is a VoIP-aware firewall, which adds application-proxy functionality to base firewall products that enable dynamic opening and closing of firewall ports on a connection-by-connection basis. This functionality can be added via upgrades to an existing firewall product, or via third-party hardware that resides logically alongside the firewall, such as those offered by Jasomi Networks and Kagoor Networks.

You also can take a VPN route to support VoIP between sites or for remote access because VPNs circumvent NAT and firewall issues by tunneling. Site-to-site VPN links are becoming more common. If you're considering one, using it to link your PBX network should be added to the plus column. However, the gotchas with VPNs that you should beware of include bandwidth and latency. The overhead and delay encryption adds should be taken into account for optimal planning.

Planning makes perfect

While VoIP can ride over the highways as our data currently does, it is a new application with new rules. Deciding on the right VoIP solution is just the beginning; deploying it on the network properly is the real task.

Knowing your network, ensuring the quality of your voice traffic, making sure your network and personnel infrastructures are up to the task and properly protecting your IP PBX will help your deployment be successful.

Percy is a technology analyst and Hommer is manager of consulting services for Miercom, a network consultancy in Princeton Junction, N.J. They can be reached at kpercy@miercom.com and mhommer@miercom.com.

Emergency 911

One of the many benefits of voice over IP is mobility. With IP phones, employees can move their phones to a new location and retain their extension numbers, voice mail access, customized button mappings and other features.

The problem is that municipalities and states have begun to mandate safety legislation requiring the ability to identify callers' locations to facilitate increased precision during 911 calls. To address these requirements, many telephone companies now offer optional E911 emergency service, which places stringent conditions on PBXs to provide location information and a call-back phone number, neither of which is required with regular 911 service.

But when using VoIP, administrators of large, IP-based systems have no easy means of identifying where on the Ethernet network a given station is physically located without manually keeping tabs on users, thus defeating some of VoIP's purpose.

Cisco recently introduced a product, Cisco Emergency Responder, that uses the phone's media access control address and a proprietary, Ethernet-based algorithm to identify users and station locations on the basis of terminating switch ports. In the case of large, multisite deployments, Cisco Emergency Responder can map specific switch ports to appropriate 911 trunks. We expect more IP PBX vendors to follow suit with similar Ethernet-based E911 support.

— Kenneth Percy and Michael Hommer

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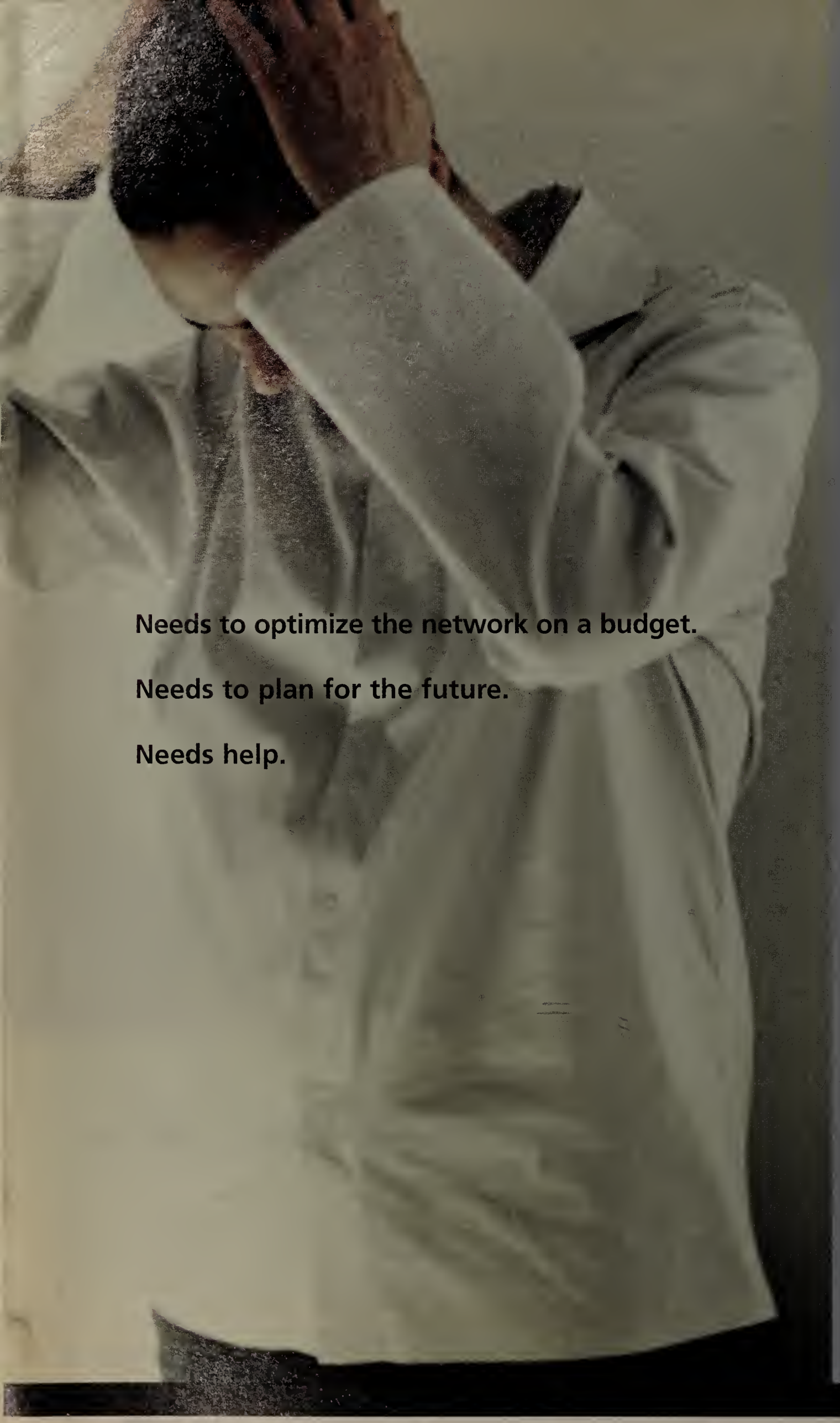

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Possible made practical

December 2002

The Top ISP Report

How is your ISP performing?

■ Is your ISP measuring up to others? Find out. Our Top ISP report is a joint venture of *Network World*, VeriTest's Internet BenchMark service (www.veritest.com) and Matrix NetSystems (www.matrixnetsystems.com). The data in this report is for December 2002 — each month you can go online at Network World Fusion (www.nwfusion.com, DocFinder: 4028) for the latest data.

The charts at right list latency data for backbone ISP providers around the world, and averages for latency, packet loss and reachability. The dial-up ISP data is provided through Veritest and includes five important categories for dial-up ISP users. The ISPs listed are the top performers — if your ISP isn't listed here, you need to ask why it's not performing as well as the top ISPs.

How we did it

Backbone data

Matrix NetSystems and its Matrix ISP Ratings service (http://ratings.matrixnetsystems.com) provide this data to *Network World*. Those ratings are an ISP performance comparison based on network median latency, packet loss and reachability. Results are as accurate and representative as possible. However, they are open to differing interpretations. Because the ISP ratings are based on off-network measurements, calculations likely will be different from those based on on-network measurements.

For a complete description of the methodology, go to www.matrixnetsystems.com/ratings/methodology.jsp.

Matrix NetSystems

Dial-up data

VeriTest and its Internet BenchMark division provide the dial-up data. *Network World* applies statistical analysis to the data. Based on the averages for the market, we list the top performers in each metric tested. We have chosen the [illegible] metrics that we believe are most important for companies; VeriTest provides [illegible] together. (Go online to see Top ISPs for all [illegible] categories.)

VeriTest

Top backbone providers

The round-trip delay between a ping being sent from a Matrix beacon and its return (in milliseconds).

Global ISPs*		U.S.		Europe		Asia	
WorldCom	64.1	Level 3	44.9	Teleglobe	137	Verio	162
SprintLink	66.4	Global Crossing	52.6	Globix	141	AIH/A-Bone	163
Cable & Wireless	68.3	Qwest	52.8	Cable & Wireless	146	AboveNet	164
Teleglobe	73.9	Verio	56.6	Level 3	146	Global Crossing	177
Global Crossing	77.2	WorldCom	59.6	France Telecom	147	SprintLink	177
Monthly avg. 69.98		Monthly avg. 67.09		Monthly avg. 159		Monthly avg. 214	

December 2002 monthly averages

	Global ISPs*	U.S.	Europe	Asia	Large ISPs	Midsize ISPs
Latency**:	69.98	67.09	159	214	65.27	122.9
Packet loss:	0.19%	0.19%	0.15%	0.29%	0.22%	0.18%
Reachability:	100%	99.87%	99.87%	99.92%	99.86%	99.98%

*ISPs that have a presence on at least three continents. **Latency is in milliseconds.

Top dial-up ISPs

Which providers are the best?

24-hour call failure rate

How often a modem call to ISP succeeds over 24-hour period. The top ISPs have low CFR percentages.

Average: 1.5%

1. SBC PacBell
2. AT&T
3. BellSouth
4. AOL
5. AT&T (BIS)

Initial modem connect speed

The negotiated connection speed to the ISP once the call has succeeded. Higher is better here.

Average: 49.27K bit/sec

1. AOL
2. SBC PacBell
3. EarthLink
4. BellSouth
5. Qwest

Average time to logon

The time to connect and authenticate to the ISP's access server. A lower time is better.

Average: 28.84 sec

1. AT&T
2. BellSouth
3. AT&T (BIS)
4. SBC PacBell
5. SBC Ameritech

Average Web throughput

Effective transfer rate of the connection. Does not reflect actual bandwidth, but rather the effective Web throughput experienced using a connection. Higher rates are better.

Average: 5.28K bit/sec

1. SBC PacBell
2. AT&T
3. Qwest
4. EarthLink
5. iPass

Average download time

Time taken for a complete Web page to download, including all page content. Measured from the first HTTP TCP packet to the last TCP connection terminating.

Average: 32.01 sec

1. AOL
2. SBC PacBell
3. AT&T
4. Qwest
5. EarthLink

2002 dial-up year in review

Average numbers for dial-up ISPs.

	Initial modem connect speed (K bit/sec)	Average time to logon (seconds)	Average Web throughput (K bit/sec)
Jan.	49.12	28.84	5.05
Feb.	49.33	29.07	5.08
March	49.24	29.22	4.98
April	49.31	29.92	4.89
May	49.35	30.23	5.07
June	49.29	29.9	5.1
July	49.25	30.06	5.21
Aug.	49.29	30.14	5.26
Sept.	49.33	29.6	5.27
Oct.	49.32	29.49	5.16
Nov.	49.22	29.55	5.12
Dec.	49.27	28.84	5.28

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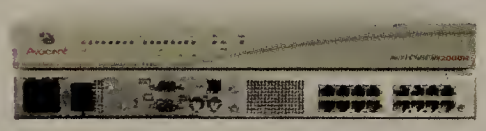

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NetworkWorld Review

Opnet IT Guru 9.0

Test app's impact on the network before you deploy

■ BY JEFFREY FRITZ, NETWORK WORLD GLOBAL TEST ALLIANCE

If a new application's performance leaves a lot to be desired, developers often point the finger at network folks, who say the network is just fine. Resolving this type of dispute is the forte of Opnet Technologies' IT Guru — a sophisticated tool that provides analysis and modeling of network performance.

We recently tested Version 9.0 of IT Guru at West Virginia University's Advanced Network Applications Lab. The product performed as expected, and was very user-friendly in its basic features. For companies in which network performance issues can cost thousands of dollars in lost revenue per minute, the package is invaluable.

Strong data analysis

IT Guru's data analysis begins with packet capture. The Application Characterization Environment (ACE) module includes a capture agent that can be installed on various machines throughout the network. This lets you measure performance from various vantage points across the network. The ACE module also can import packet traces from network analyzers, such as Network Associates' Sniffer series.

After visually inspecting traffic, ACE takes the raw data and filters it by various criteria. This is where the performance analysis begins. The ability to view network and application performance side by side in a graphical format is a nice feature, which makes it easy to determine the location of performance issues and delays.

The AppDoctor module offers spreadsheet-like diagnostic and statistic windows that help determine if delays are occurring in the application or network. AppDoctor analyzes different parameters, including average packet size, retransmissions, the number of no acknowledgements, and errors. Any out-of-range values are highlighted in yellow by default. Although you can set the out-of-range thresholds, we found the default settings adequate for most diagnoses. AppDoctor gives basic explanations of the delay types it identifies and offers possible solutions. While far from comprehensive, we found the information useful.

Advanced controls in the Quick Predict module let you introduce variables that can help predict the effect of changes on the network. These variables include changing the bandwidth, latency, packet loss, link optimization, payload/packet size and TCP window size (setting the optimum TCP window size is often overlooked in network performance).

While a comprehensive network analysis was beyond the scope of this review, we modeled various changes within the network to see how it would affect our bandwidth. When we decreased bandwidth or increased latency, we could see that our throughput was significantly throttled back. This what-if analysis is especially helpful in tweaking the performance of multimedia applications and networks to assure smooth streaming video or audio.

Reporting

IT Guru's Web-based reports mirror the reports of the package itself. No new information or views are offered. The Web-based reports were easy to browse through and sometimes presented data with more clarity than the IT Guru graphical user interface. Help is available on several charts in the Web reports, such as the Application Message chart and the Network Packet Analysis, but is not available with any of the AppDoctor reports. We think it would have been better to provide consistent help on all Web reports.

Installation and documentation

IT Guru's installation was straightforward and took less than 15 minutes. When it completed its work, the installer simply quit. We would have preferred a confirmation that the installation had been completed successfully. The documentation is on CD and requires Adobe Acrobat Reader, but the helpful, documentation installer offers to install Acrobat Reader if it isn't already on the system. Taking up nearly 50M bytes, the documentation is well laid out, easy to use and includes a large number of examples and tutorials. There is no printed version available — something we felt should be offered in a product this comprehensive.

More online!

See how we conducted our tests.

DocFinder: 4024

A note on cost

Overall the product performed as expected. The basic IT Guru features (which Opnet says are most often used by its customers) are user-friendly. Beyond this, the product is detailed and feature-rich, but also contains a steep learning curve. We found ourselves addicted to the more advanced features, and wished we could have more time to dig into these capabilities. With adequate behind-the wheel experience, a network technician could find the product very useful in evaluating the effects of new applications and network changes without harming the production network.

However, this is an expensive package. The costs for typical installations of IT Guru range from $40,000 up to $100,000, based on the number of modules and customization purchased. At first we were put off by the cost. How many corporations can afford a software package that costs as much as a high-end router? Then we realized that companies where network performance issues can cost thousands of dollars in revenue per minute would find the package invaluable. For a bank, a commerce Web site, or manufacturing facility, the decision is not whether you can afford IT Guru but if you can afford not to use it.

Bird Vilseck and Jeff Lucas contributed to this review. Fritz is the director of networking at West Virginia University. He is the author of Remote LAN Access: A guide for networkers and the rest of us *and* Sensible ISDN Data Applications. *He can be reached at jfritz@wvu.edu.*

Net Results

IT Guru 9.0 (Windows 2000)

4.15 RATING

Company: Opnet Technologies, (240) 497-3000 **Cost:** $40,000 to $100,000 based on modules and customized models purchased. **Pros:** Powerful and sophisticated application/network performance analysis; accurate modeling and analysis of performance issues; basic features easy to learn and use. **Cons:** Very expensive; not enough feedback during installation; steep learning curve on advanced features; inconsistent Web report help.

What's the score?	IT Guru 9.0
Accuracy 40%	4.5
Features 30%	4.5
Ease of use 15%	3
Documentation 10%	3.5
Installation 5%	4
TOTAL SCORE	4.15

Individual category scores are based on a scale of 1 to 5. **Percentages** are the weight given each category in determining the total score. ■ **Scoring Key: 5:** Exceptional showing in this category. Defines the standard of excellence. **4:** Very good showing. Although there may be room for improvement, this product was much better than the average. **3:** Average showing in this category. Product was neither especially good nor exceptionally bad. **2:** Below average. Lacked some features or lower performance than other products or than expected. **1:** Consistently subpar, or lacking features being reviewed.

HOT Companies to watch

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1/03—01054B—JS

Management

Strategies

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- PROJECT MANAGEMENT
- BUSINESS JUSTIFICATION

Fact-finding mission

Ask lots of questions to squeeze the air from inflated resumés and uncover false claims.

■ BY SUZANNE GASPAR

A red flag waved when Vivek Kundra heard his new consultant with a degree from Stanford University mispronounce the prestigious school as "Stamford."

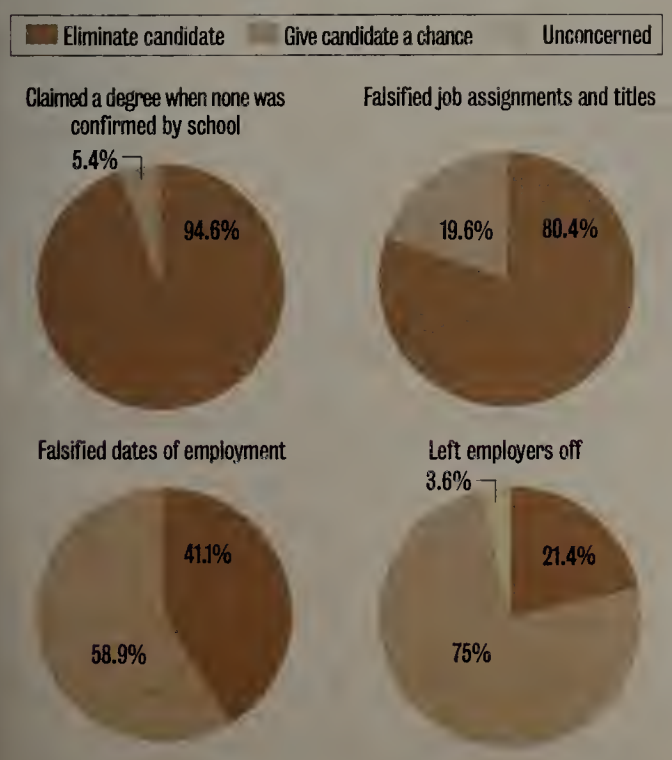
Kundra, IT director for Arlington County, Va., asked the consultant if he knew a professor. The consultant said he didn't, then clarified that he meant he attended Stamford University in England. "That's when it clicked in my mind," says Kundra, realizing something was amiss. "It's one thing to be ambiguous and another to straight-out lie. Lying on a resumé is a sign of what's to come."

After playing a role in selecting the consultant, Kundra trusted the consulting firm to verify the resumé of its employee. Within three weeks, slacking performance contradicted the claimed credentials of a doctorate and 15 years of experience.

When the consultant arrived for the job, Kundra asked him to spend a few weeks researching a PDA implementation strategy and present his recommendations in a report. "I wasn't happy with his first presentation. ... Technically, he couldn't perform. When asked about security considerations, he tried to dodge the question," Kundra says.

The worst infractions

Hiring managers are least tolerant of falsified education claims on resumés, yet willing to give candidates a chance when employers are left off a resumé.



The deception resulted in six weeks of lost contract wages because Kundra refused to pay for inept performance. Eventually a more-experienced consultant came in to finish the project. Only then did Kundra learn that his complaint about the first worker had uncovered the lies.

Resumé puffery ranges from inflations to untruths. But a verified paper trail and tactics such as technical drill-downs and panel interviews can confirm the context and depth of skills, integrity of responses and openness of communication.

Kundra figures about 85% of the resumés he reviewed for senior IT positions last year included inflated experience.

But Jude Werra estimates fewer applicants outright lie on resumés. His management consulting firm, Jude M. Werra & Associates, produces the semi-annual Liars Index. The report, which is based on 300 resumés, measures the percentage of people who misrepresent their education claims.

The rolling two-year average that includes the second half of 2002 shows a decline to the lowest average ever (see graphic, right). Still, that's more than many employers would like. "Employers rate a claimed, unearned degree as the worst of the inflated resumé offenses," Werra says.

In Werra's experience, some IT executives aren't above misrepresenting their credentials. He cites an occasion when he wasn't able to verify degrees cited on a resumé. Someone who learned on the job falsely listed a bachelor of science in engineering and a master's in business administration. "When faced with a client like that, he's out," Werra says. "You can't rely on that person."

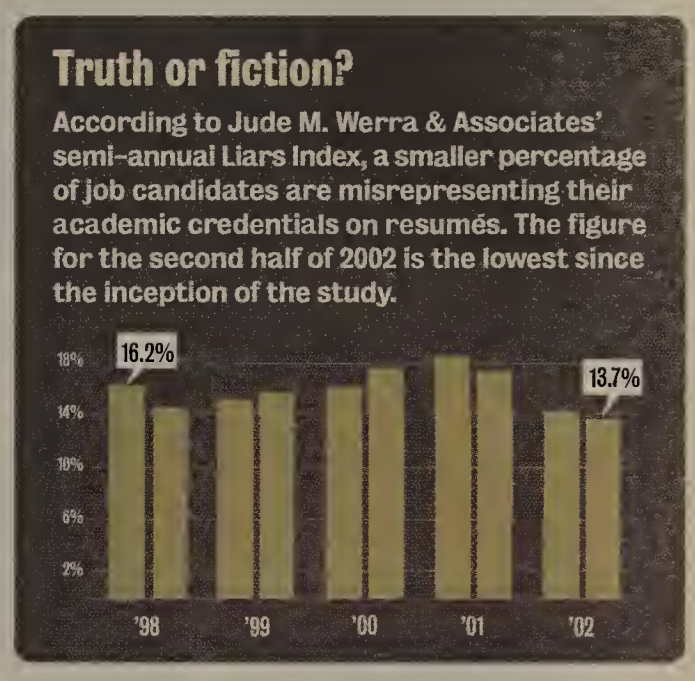
The firm also polls its newsletter readers about a series of resumé misrepresentations that include omitting employers; inflating performance results; and falsifying job titles, assignments, compensation history, association memberships, and dates of employment and education (see graphic, left).

Exaggerating results or the effect on a business is a common way of stretching the truth. "A lot of results are of team behavior ... rather than 'I' did it," Werra says.

Kundra agrees secondhand knowledge can lead a candidate to misrepresent experience, "because they've sat in on lots of meetings and think they know enough to talk about it."

Yet, Kundra admits it's hard to ask the right questions about a technology with which you're not familiar. The consultant he hired talked his way in the door. "He talked about all the work he had done in Europe and California. He was a very good communicator. He would look you right in the eye, use technical jargon, good posture and smiled a lot," Kundra says.

There are people for whom life is just a series of deals, going from job to job and tricking employers into hiring them, Werra says. However, he adds, "career folks understand the value of telling the truth."



Credentials alone don't get people hired. Rather, it's intelligence and values that emerge with dialogue. Drill down with lots of questions for an applicant to expose deceit, Werra recommends. "Most people aren't good at misrepresenting themselves," he says.

When job candidates don't include dates on their resumés, Werra asks why. He finds that most will admit to not having particular experience but say someone else told them to include it.

Look for patterns, and you'll probably pick up on the discomfort that's apparent when something isn't right. Learning that an applicant got fired and left a company off his resumé should knock that candidate off the list. The more someone avoids telling the story or behaves defensively, "the more suspicious and less attractive they become," Werra says.

Every detail on a resumé is fair game, Joe Puglisi says. The CIO for EMCOR, a construction and facilities service firm in Norwalk, Conn., says resumé details lead to questions about the team and specifics of work done. "A panel of technical experts pounding the candidate with interview questions helps to validate experience," he says.

Asking hard, technical questions should identify the gaps, but getting candidates to reach the point of saying they don't know reveals emotional maturity, Kundra says.

Inflated resumés are a reality of the hiring process, says Puglisi, who spends as much time in an interview as a candidate is worth.

"Everyone paints their rosy self ... tech folks who only coded and senior executives who take credit for increased sales when they'd only automated the process," he says. While Puglisi hasn't caught a blatant lie, he admits to hiring people who were convincing enough but clearly not right for the job. ■

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- 15", 17", or 19" TFT/LCD monitor
- 15" up to 1024 x 768 resolution
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- Front panel conceals unit when not in use

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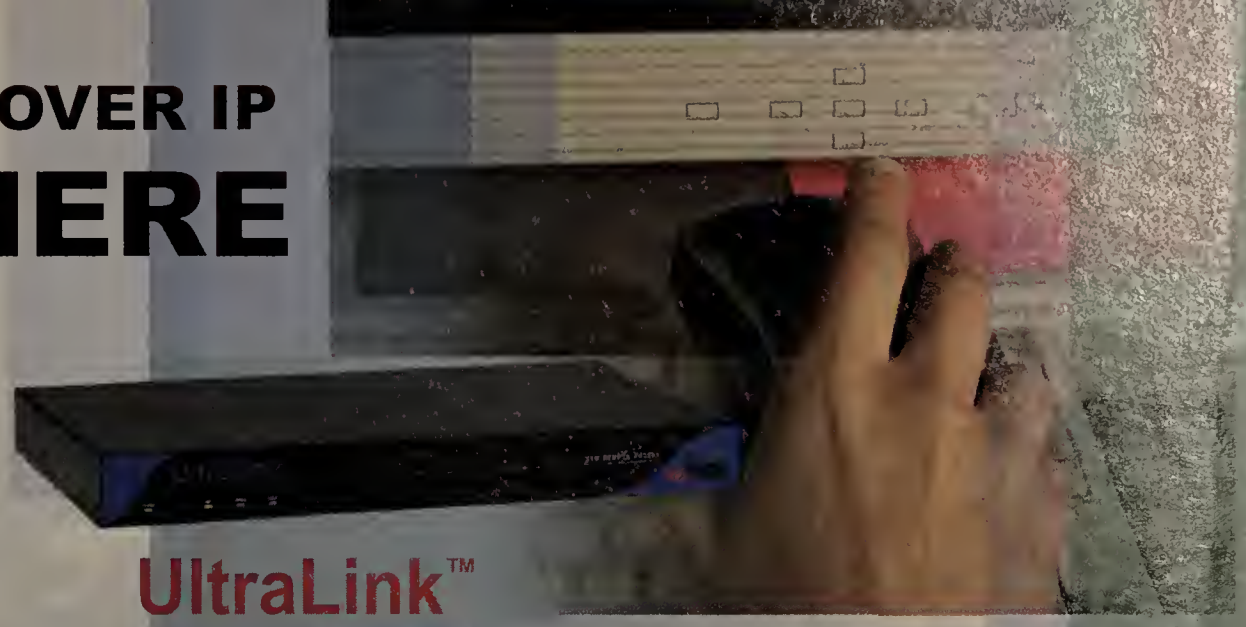

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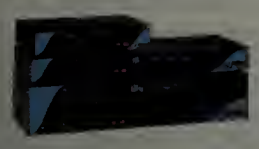

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UltraView Pro™

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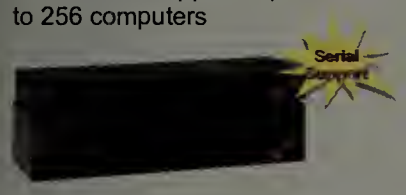

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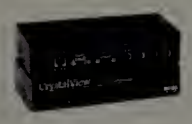

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Now available with Audio
Supports PC, Sun, and Serial

KVM EXTENDER--CAT 5

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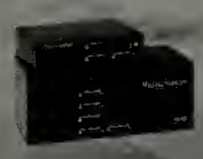

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MultiStation™

Up to four KVMs to one
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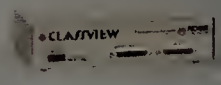
KVM sharing



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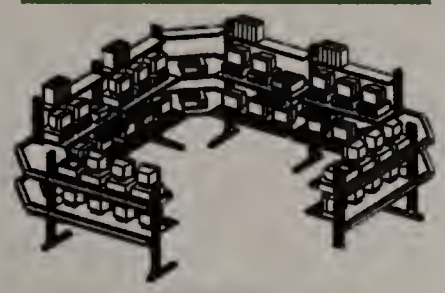

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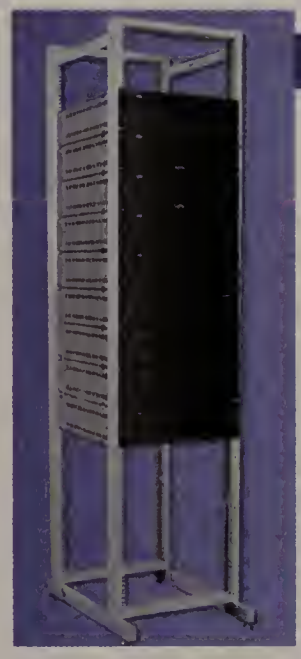

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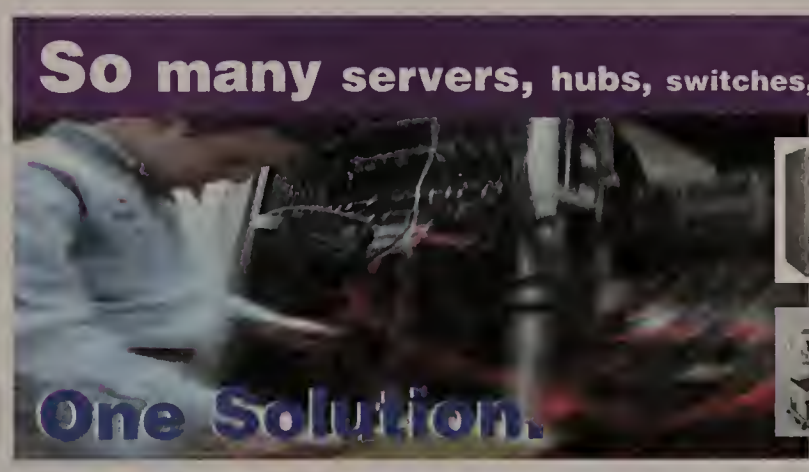

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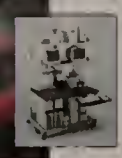

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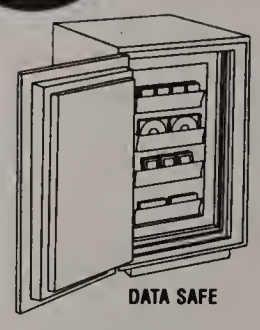

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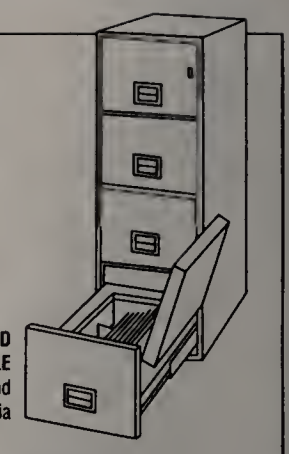

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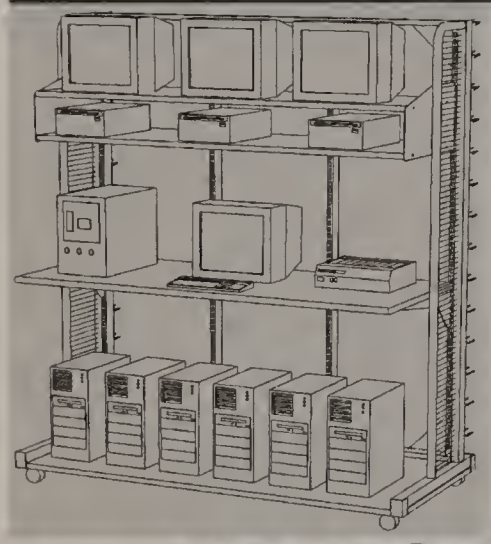

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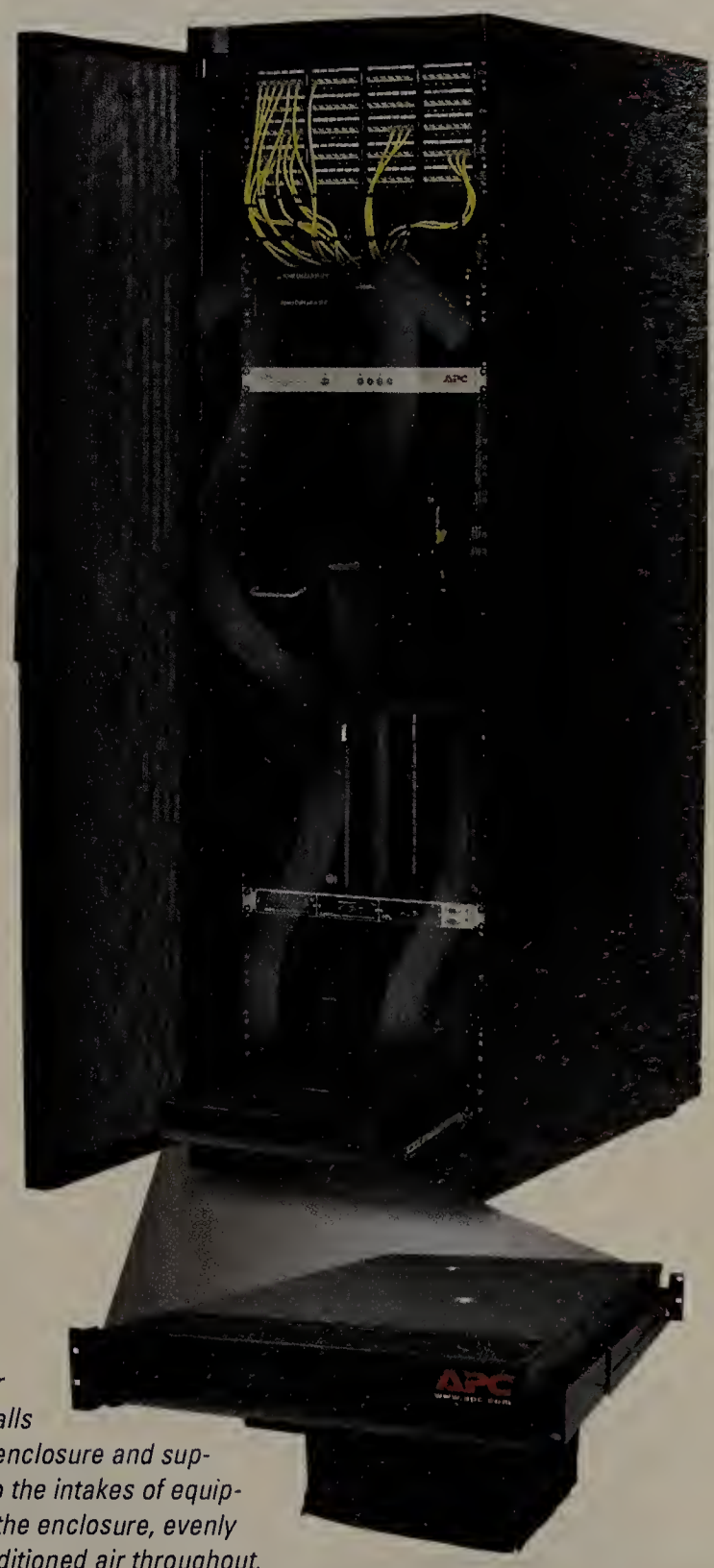

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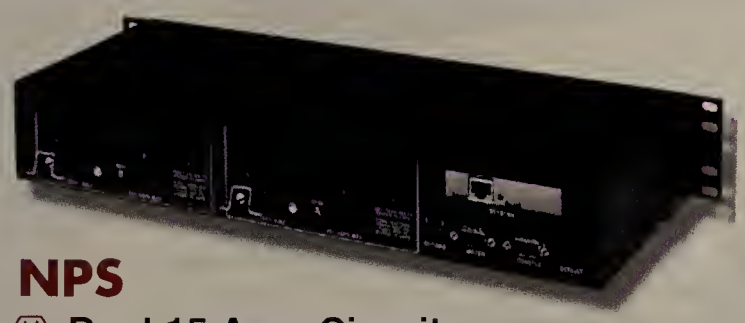

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Atlanta, GA 30338

Programmers, Jr. Programmers, Software Engineers & DBAs. Design, develop, test and implement specialized software apps. in (a) Oracle Financials and Manufacturing 11i and related tools, Erwin, Cognos Suite, Business Objects and MF Cobol; (b) SQL DBA, Unix Admin., VB, Sybase, Cobol, C, Cold Fusion and related technologies; (c) J2EE and related technologies, Rational ClearCase, CORBA, MQSeries and related tools; (d) BDF, JPROBE, Test Factory, Requisite Pro, CORBA, Patrol DB, LDAP Server and Silk Pilot; (e) EAZYTRIEVE+, Xpedio Server, SQL Backtrack, PatrolDB, NetIQ, Infopac, Netview and Gauntlet Firewall; (f) PeopleSoft HRMS (HR, Payroll and Benefits Administration) Application Engine, SQR, Cobol, DB2, CICS, nVision, Crystal Reports and related tools; (g) Java and related tools, CORBA, Sybase, Swing and Rational Tools (h) Oracle Database Admin. in Oracle 11i, Oracle Enterprise Manager, Solaris AIX, VB, C++, SQL*Plus and related tools; (i) Cold Fusion and related tools, ASP, XML, DHTML, Crystal Reports, Java, VB, DCOM, MS SQL and Oracle 8i; (j) Oracle Financials and PeopleSoft, Tuxedo, Developer/Designer 2000 and related tools; (k) Hyperion Essbase Apps. and related tools; (l) Oracle, Peoplesoft, ASP, Java and related tools, SQA Robot, Mercury Test Director and Silk; (m) Clarify and related technologies; (n) JDK, ASP, CORBA, Oracle, SQL Server, Linux, VB and HTML (o) SAS and related packages, Java, Business objects and Oracle. US Workers only. Consulting positions requiring travel. Prevailing wage/benefits. Send resume to HR, SSG, 2005 Concord Pike, Suite 209, Wilmington, DE 19803, identifying interested position(s). No Phone calls please.

Senior Technical Architect (multiple openings) needed to design system structure, implement, & maintain enterprise-grade CRM s/w solutions using E.piphany on complex global multi-platform projects. Direct jr. consultants & manage all business/tech. aspects of projects. Design & implem. custom web-based applics. rel. to CRM & E.piphany using JSP, ASP, HTML/ DHTML, XML, JAVAScript, J2EE, & JBOSS. Req. BS in CS, IS, MIS, or IT or equiv.. Also req. 2 yrs. exp. in offered job or in E.piphany consulting at a technical lead level. In lieu of BS, will accept 3 yrs of univ. studies toward BS in stated field + 3 add'l yrs.' exp. in software engineering. Must have E.piphany product certification in at least 2 of these 3: Interaction Platform, E.-piphany Fundamentals, Campaign Management for Technical Professionals. Req. 80% travel throughout US. No calls. See www.epiuse.com /company/jobs.php. Apply by resume to Ref. 74HR, EPI-USE America, Inc., 400 Galleria Pkwy., Ste. 1500, Atlanta, GA 30339.

GeoDecisions, a subsidiary of Gannett Fleming, seeks candidates for GIS positions in Camp Hill.

GIS Application Developer: Provide support for GIS work as part of GeoDecisions team, assist to plan, analyze and develop GIS application; Assist in design and management of database for GIS, develop data modeling diagrams and prepare flow charts and block diagrams. Involves using HTML, Java/ JavaScript, ASP, Oracle, Vis Basic, SOL. Requires exposure to GIS and a Master's Degree in Computer Science or related field.

Programmer Analyst on GIS team: Analyze, evaluate and modify systems and programs for GIS data processing. Work with tools including web, HTML/DHTML, ASP, JavaScript, GeoMedia, GeoMedia WebMap, Visual Basic, VS.NET. You must have 2 yrs. of relevant exp. and a Bachelor's Degree in Computer Science or related field.

Send resume with cover letter indicating position preference and reference code MW to: Gannett Fleming, Inc., 207 Senate Ave, Camp Hill, PA 17011. EOE M/F/D/V

Software Development Engineer to work under supervision to design and develop risk assessment software, product enhancements, and defect resolutions utilizing object-oriented languages including C++ and Java, ODBC, OLE and Sybase Adaptive Server in an NT environment. Requires a BS in Electronic Engineering & 2 yrs. exp. Oakland, CA job location. Refer to job Z-OKL-1.

Software Test Engineer to work under supervision to conduct performance tests on risk assessment software using object oriented technologies including C++ and Apache Ant. Apply knowledge of statistical and probability mathematics and programming to test and/or modify risk assessment algorithms. Requires a BS in Computer Science & 2 yrs exp. Oakland, CA job location. Refer to job HC-QAE.

Mail resume to L Phillips, ABS and Affiliated Companies, 16855 Northchase Dr., Houston, TX 77060.

ENGINEERING
Riverstone Networks is looking for experienced individuals with bachelor's degrees or equivalent for the following positions:

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- **Configuration Engineer/ Principal Configuration Engineer**
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- **Software QA Engineer**
- **Software Engineer**

See our website at www.riverstonenet.com for more information. Must be able to show valid US work authorization. Send resume to: Riverstone Networks, Attn: Professional Staffing, 5200 Great America Pkwy, Santa Clara, CA 95054; or Fax: (408) 878-6790. Email: jobs@riverstonenet.com. EOE

Computers
Multiple positions opened in B2B Technologies, Inc. in North Brunswick, NJ for Senior Software Engineer. The applicant must have a B.S. w/5 yr. experience or M.S. w/2 yr. experience in telecom application design & development with degree in computer science or engineering or related fields. Job duties include designing and developing architecture for customer application systems to provide online network management services using object-oriented technology and various software development/testing tools, and developing and implementing high performance applications using various data communication protocols, standards and equipment. Please send resume to: Ms Dolores H. Maher, 201 N. Center Dr., North Brunswick, NJ 08902 or fax to 732-951-0704.

Simulation Analyst. Develop workforce staffing models for Request For Proposal support in new business development. Design and develop call center simulation models using ARENA, SIMAN, and CallSIM software to replicate client network. Database analysis of call center metrics to improve decision-making process. Must have Bachelor's degree in Engineering, Mathematics, Statistics or equivalent, one year experience, and knowledge of ARENA v 5.0 or higher; CallSIM and SIMAN in Windows environment; C++ programming; VB 5.0 or higher; and TCS/IEX/ Blue Pumpkin. Send resume with cover letter to Cindy Corkery, APAC Customer Services Inc., 6 Parkway North Center, Deerfield, IL 60015. EEO/AA

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Software Developers

Develop the company's J2EE based portal product. Tasks cover application lifecycle, including analysis, design, technical research, coding, application servers configuration and must have Bachelor Degree in Science, Math or Engineering and a minimum of 2 years of experience in the following skills: Xpath, SAX, DOM, Http Unit, JUnit, J2EE, Xalan's Extension, XML, XSL and framework design, 9-6, 40 hours minimum per week.

Mail resume to:
Mongoose Technology, Inc.
1300 Hercules Dr., Suite 130
Houston, Texas 77058

F/T Computer Systems Administrator. To manage information system activities and design POS systems using Visual Basic, Microsoft SQL Server 2000 & 7.0, MS FrontPage, Access 2000, and Vb Script. Must have 4 yrs. of exp. Must have Bachelor's degree or foreign degree equivalent in Software Engineering. Course work must have included Computer Architecture & Microprocessor courses. Salary: Competitive. Send resumes to: T. Ford, Le Petit Bistro, Inc., 5600 Roswell Rd., East Bldg., Ste 250, Atlanta, GA 30342. No Calls Please.

Database Administrator, Magazine Publication. Minimum 6 years exp. Design, program, and implement database applications. Provide database systems administration, including managing users, defining user security policies, and disaster recovery. 40 hrs/wk, 9AM-5PM. Competitive salary. Send resume to: Koa Life, 2505 Chamblee Tucker Rd., #311, Chamblee, GA 30341.

PROGRAMMER ANALYSTS for Chicago, IL office. Design & Develop software applications using C, C++, VB, Delphi, ASP, XML, Coolgen, Interwoven; Develop client/server applications in oracle, PL/SQL, Developer 2000 & Designer 2000. Bachelors req_d in Computers, Engineering or related field of study +2 yrs of related exp. 40 hrs/wk. Must have legal authority to work permanently in the U.S. Contact HR Manager, Anthropology International, Inc. 1120 North LaSalle Dr, #9P Chicago, IL 60610

Prog/Analysts to analyze and design datawarehousing / datamart appls using Cognos tools, Oracle, MS SQL Server, HTML, Java, C++, Java Script, JSP, VB on UNIX, Windows OS or to analyze and design S/W appls using SAP R/3, ABAP/4, Workflow Technology, C, C++, VB, Oracle, MS SOL Server on UNIX and Windows OS; gather and document reqs from user community; test and troubleshoot project appln code according to system objectives. Require: B.S. or foreign equiv. in CS/Engg (any branch) with 2 yrs exp. in IT. High salary. F/T. Travel Involved. Openings in Norcross, GA and Imperial, PA. Indicate location desired. Resumes to: HR, Smartsoft International, Inc., 4898 S. Old Peachtree Rd., Ste 200, Norcross, GA 30071.

Network Systems Administrator: Req: 6 yrs. exp. as Ntwk Sys Admin, Ntwk Sys Analyst, or Comp. Prgrmr. Duties: install, configure & support the org's LAN, WAN, & Internet syst; maintain ntwk hardware & software; monitor ntwk to ensure availability to sys. users, perform necessary maintenance to support availability; & plan, coord, & implement ntwk security measures. Competitive sal. Plse send res. to Diego Schwartz at Powerpoint International Corp. 6724 NW 72nd Ave. Miami, FL 33166.

Multiple openings at Imperial, PA and Norcross, GA for Prog/Sys Analysts, DBA's, S/W Engineers to design/develop S/W appls using some of the following - COGNOS, datawarehousing; Cobol, CICS, DB2; Java, PB, HTML, XML; C++, VB, Oracle, Dev 2000; wireless, web, OO technologies; SAP, ABAP/ 4; Oracle/Sybase/Informix database admin; Unix/NT system admin. BS/MS or foreign equiv. in CS, Engg, Science, Math, Business or related field and relevant exp. High salaries. F/T. Travel involved. Indicate office location desired. Respond to: HR, Smartsoft International, Inc., 7900 Steubenville Pike Suite 21, Imperial, PA 15126.

Multiple fulltime IT positions available for ERP Professionals. Req. B.S. in Computer Science or related, and minimum 2 years on-the-job experience in system design, configuration, development, programming, testing, training & implementation of ERP solutions involving one or more of the following areas - SAP, Oracle, Interfaces, QA Testing, Integration Tools. Resume to NexLink Systems, Inc., 2517 Grendon Drive, Wilmington, DE 19808

MphasiS-BFL Ltd. and its subidiary Mphasis Corporation has multiple openings for the following postions at its office in New York and unanticipated client sites throughout the U.S.: Prgrammer Analyst, Software Engineer, Proejct Manager, Management Analyst, Sales Engineer, Business Development Manager, Finance Manager. Please send resume and salary history to: hr@mphasis.com or mail to 444 Park Avenue South, Suite #503, New York, NY 10016.

Ft. Lauderdale software developer seeks software engineer to design, develop, upgrade & implement software systems. Solid Clarion & Java programming skills. Reqd. BS or Foreign Degree Equi. in Computer Science & 3 yrs of exp as senior programmer analyst. Send resume to: Vito A. Bellezza President, Engineered Business Systems, 6801 Powerline Road, Ft. Lauderdale, Fl. 33309.

Sales & Inventory Data Manager - Work w/ comp. Software & databases to manage inven. for lge, high-end fashion distributor. Req'd: AAS in CS, Comp. Programming, or rel'd. tech. fld. & 2 yrs. exp. in job/ rel'd pos. in sales &/or inven. Data mgmt. Fluency in Italian; VB, C/C++, COBOL, & HTML. Must have exp. w/ inv. mgt & control for lge comp. Send resumes to GVD, LLC; 645 5th Ave, 12th Flr, NY, NY 10022.

Seeking qualified applicants for the following positions in Memphis/ Collierville, TN: Senior Programmer Analyst. Formulate/define functional requirements and documentation based on accepted user criteria. Requirements: Bachelor's degree* in computer science, MIS or related field plus 5 years of experience in systems/applications development in a mainframe environment. Experience with airline freight rating systems/applications, COBOL and IMS DB/DC also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

Senior Technologist, Systems Development sought by Novartis Pharmaceuticals Corporation for East Hanover, NJ office. Must possess a Bachelor's degree or equivalent in Engineering or directly related field and 5 years exp. in software/systems development/design and analysis including Base SAS/SAS Macro language programming exp. for pharmaceutical industry. Respond to: Arlene O'Rourke, Human Resources Dept. Requisition #001, One Health Plaza, B105/PL088E, East Hanover, New Jersey 07936. Novartis is an EEO Employer.

Optimal Solutions Integration, Inc. has multiple openings for SAP and i2 Consultants, Software Analysts and System Analysts. Please send resume with salary history and requirements to Optimal Solutions Integration, 8445 Freeport Parkway #240, Irving, TX 75063. Open to Green Card holders or US Citizens.

S/W Enggs: lead teams to analyze, design, develop, appls using Java, C++/C, COBOL, JSP, Servlets, HTML, XML, VB, VBScript, Jscript, Jbuilder, Oracle, SQL, Sybase, etc. on UNIX, Windows OS; interact with clients/users to determine reqs; conduct feasibility study; perform unit/integration testing, performance tuning, query optimization; evaluate team members, train end users. Require: MS or foreign equiv in CS/Engg. (any branch) & 3 yrs of exp. BS or foreign equiv in any of the above fields with 5 yrs of relevant progressive exp will also be accepted. High salary, F/T. Travel involved. Resumes to Compsoft Technology Solutions Group, Inc., 11 N Roselle Road, Schaumburg, IL 60194

Systems Analysts/Software Engineers for consulting co in Chicago, IL. Must possess Bach degree in Comp Sci/ Com Eng/Math or reltd field & 1-3 yrs exp in relatd position. Send resume to: U & X Group, 1000 Route 9 North, Woodbridge, NJ 07095, attn: JC.

Megasoft Systems, Inc. a SAP Consulting firm has immediate, multiple openings for exp'd. Programmer Analysts to assist in the development of tools for the utility industry using SAP R/3 software, ABAP / 4 languages. Requires B.S. Comp. Sci. or rel. field, or equiv. & min. 2 yrs. exp in job offered; must have good communication skills & be highly motivated. We offer competitive salary & benefits pkg. Qualified candidates send resume to:
Attn.: Chad Wickes
Megasoft Systems, Inc.
2550 Middle Road # 300
Bettendorf, IA 52722

Programmer Analysts needed w/exp in using Oracle, Informatica and Java. Erwin, EJB, SQL, PL/SQL and SQL Server. Implement & customize Oracle Applications on Windows NT/2000, Unix, Sun Solaris & Sun Sparc Solaris Operating systems. Send resumes to: Polysoft Corporation 1560 S. Carriage Lane, Chandler, AZ 85248

Sr. Programming Analyst (multiple positions). Design customized techn appl programs. Install & config program prod. Determine tech infrastructure & comm. Req. Test appl. Analyze, design & develop app. Interfaces using IBM AS400, RPGLE, C/400 & Java/400. Req. BS in Comp. Sci., Comp Eng. Or Elect. Eng. And 5 yrs exp as Programmer. 40 hr/wk. Job/interview site: Irvine, CA. Send resume to SVI Solutions, 5607 Palmer Way, Carlsbad, CA 92008.

S/W Enggs. to analyze, design and develop complex scientific appls using either COBOL, CICS, JCL, VSAM or Cobol/400, RPG/400, OS/400 and Java, JDBC, Servlets, IBM Websphere under Windows and AS/400 envir; coordinate between clients/team to ascertain user reqs; assist in project planning, scheduling, presentation; plan/execute quality control policies. Require: MS or foreign equivalent in Sci/CS/Engg (any branch)/related field. Travel Involved. High salary. F/T. Apply to: HR, Salem Associates, Inc. 405, 6th Ave, Ste 102, Des Moines, IA 50309.

Senior Software Engineer responsible for research, design and developing computer software systems. Will conceptualize, design and construct a framework for business application using various platforms including COBRA/J2EE. Design software systems using application development software and technology such as C++, Java and object oriented design. Must have 5 yrs of exp. in job offered. Salary Competitive. Send resumes to: Wendy Davidson, Mentisys, Inc. 1375 Remington Rd. Ste. A, Schaumburg, IL 60173.

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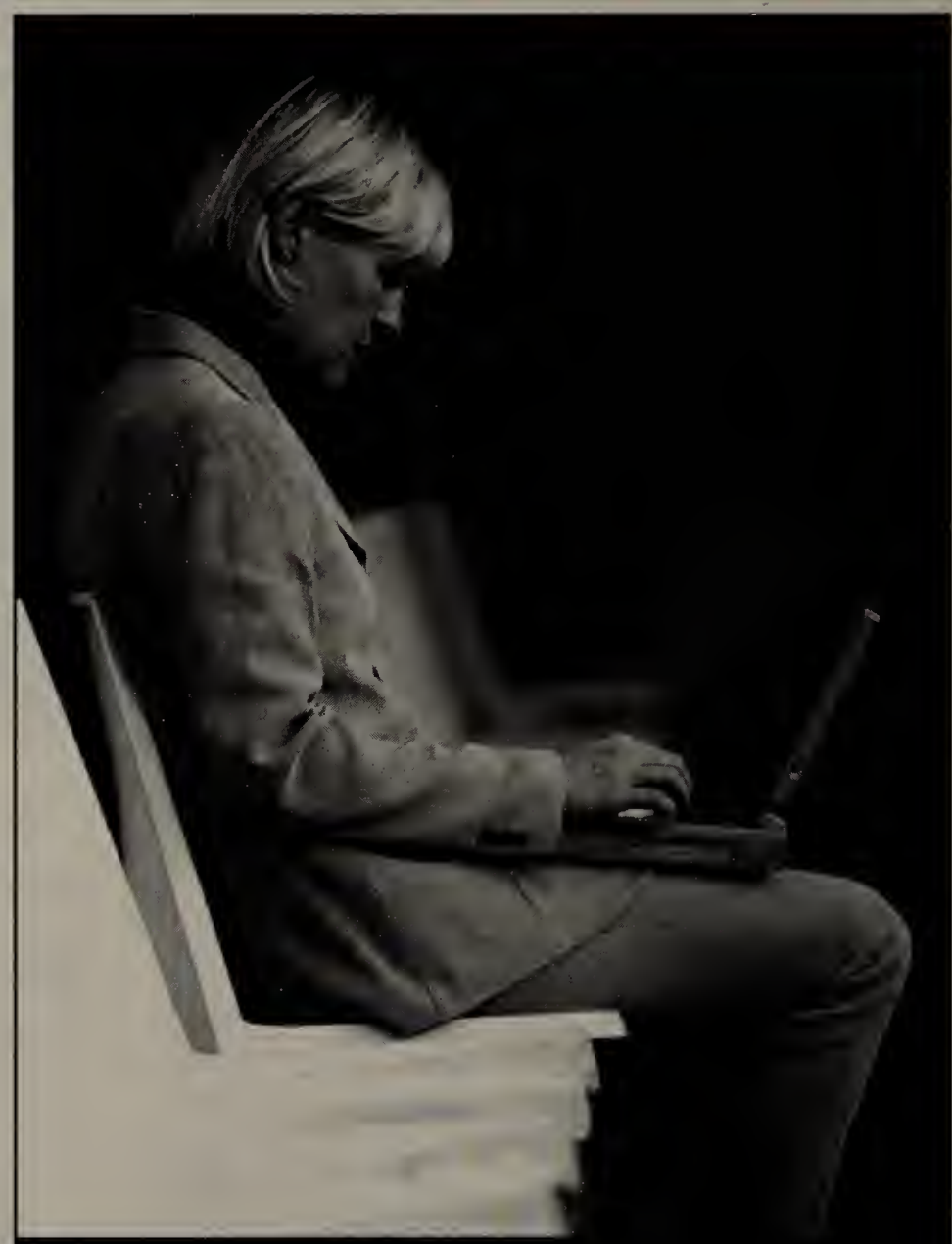

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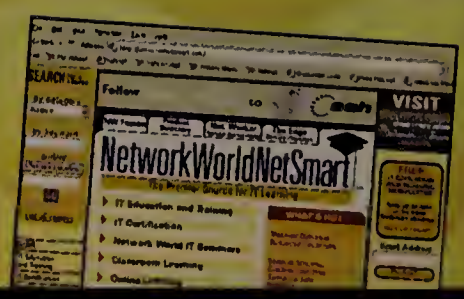

NetworkWorld

Editorial Index

A
Alacritech 1
AOL 55
AT&T 8, 55
Avaki 26

B
BellSouth 55
BMC Software 1
Brocade 21

C
Cable & Wireless 8, 55
Celite Systems 78
Cenata Networks 1
Cisco 1, 8, 12, 21, 37
Cogent Communications 33
Computer Associates 10
Compuware 1
Crescent Networks 8

D
DataPower Technology 29
DataSynapse 26

E
EarthLink 55
EMC 1
Emulex 1
EqualLogic 1
Eurologic 1

F
Foundry Networks 78
France Telecom 55
FrontBridge 29

G
Global Crossing 55
Globix 55

H
HP 1, 21
Huawei Technologies 8

I
IBM 1, 10, 24, 26, 29
Inktomi 10
Intellireach 29
Internet Security Systems 18
IPass 55
Ipsum Networks 1

J
Juniper 37

K
Kontiki 26

L
Laurel Networks 37
Level 3 Communications 55
Lotus 1
Lucent 37

M
MailFrontier 29
Metromedia Fiber Networks 33
Microsoft 8, 14, 24, 30
Mobile-Trends 44

N
Netgear 44
NetScout 1
Network Associates 30
NextHop Networks 37
Nishan Systems 1

O
Okapi Networks 1
Okena 8

P
Peribit Networks 21
PKware 29
PlaceWare 14
Platform Computing 26, 47
Precise Software Solutions 10

Q
Qlogic 1
Qwest 55

R
Rational Software 10

S
SANRAD 1
SBC 33, 55
Sprint 12, 55
Stonefly Networks 81
Sun 26

T
Teleglobe 55
Tivoli 22

V
Verio 55
Veritas Software 10

W
Wily Technology 29
WorldCom 33, 55

X
Ximian 10
XO Communications 8

Y
Yahoo 10

Advertiser Index

Advertiser	Page #	URL
*3Com	54	www.3com.com/solutions_in_action
ATTO Technologies Inc	65	www.attotech.com
Adtran	35	www.adtran.com/info/?netvanta3000
Alcatel Data Networks	9	www.alcatel.com/enterprise
Altigen Communications	53	www.altigen.com/nw
American Power Conversion	67	www.apc.com
Amplify.net, Inc.	20	www.amplifynet.com
Avocent-Huntsville	11	www.avocent.com
British Telecom Inc	31	www.britishtelecom.com
CDW Computer Centers Inc	19	www.cdw.com
Cisco Systems	23	www.nwfusion.com/cisco/security
Computer Associates	82	www.ca.com/brightstor/portal
Connect-Tek	62	www.connect-tek.com
CyberGuard	64	www.cyberguard.com
Cyclades Corp	60	www.cyclades.com
Dell Computer Corp	51	www.dell.com/switch
Dell Computer Corp	38-39	www.dell.com/networkworld
Digital V6 Corp	66	www.digitalv6.com
dtSearch Corp	72	www.dtsearch.com
Enterasys Networks	27	www.itworld.com/itwebcast/enterasys/
Enterasys Networks	36	www.enterasys.com/nw/right-switch1
F-5 Networks	24	www.f5zoom.com
Fluke Networks	25	www.flukenetworks.com/wireless
Foundry Networks	28	www.foundrynetworks.com/fes
Fujitsu	13	www.ftsi.fujitsu.com/ad
Global Computer Supplies	70	www.globalcomputer.com/go/mag/lan
Global Technology Associates	71	www.gta.com
Hewlett Packard	81	www.hp.com/go/proliant74
Kyocera Mita	32	www.kyoceramita.com
Microsnap	72	www.microsnap.com
Microsoft Corp	16-17	www.microsoft.com/CCcertification
Microsoft Corp	2-5	www.microsoft.com/enterprise/reliability
Netsupport Solutions Inc	68	www.netsupport-inc.com
Network Instruments LLC	70	www.networkinstruments.com
Phonetics Inc	73	www.ims-4000.com
Qualcomm	42-43	www.qualcomm.com/enterprise
Rose Electronics	61-63	www.rose.com
Sandstorm Enterprises	73	www.sandstorm.net
Server Technology	62	www.servertech.com
Spectrum Control	68	www.specpower.com/remote22
Sun Microsystems Inc	6	www.sun.com/whynot
TrueTime	66	www.symmetricom.com/IPtiming
Veritas Software	45	www.veritas.com/solaris9
Watchguard Technologies	15	www.watchguard.com/guide
Wave Wireless Networking	64	www.wavewireless.com
Western Telematic Inc	69	www.wti.com
Zultys	34	http://nw.zultys.com
ZyXEL Communications Inc	40	www.zywall.com/network

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Fireclick, Inc
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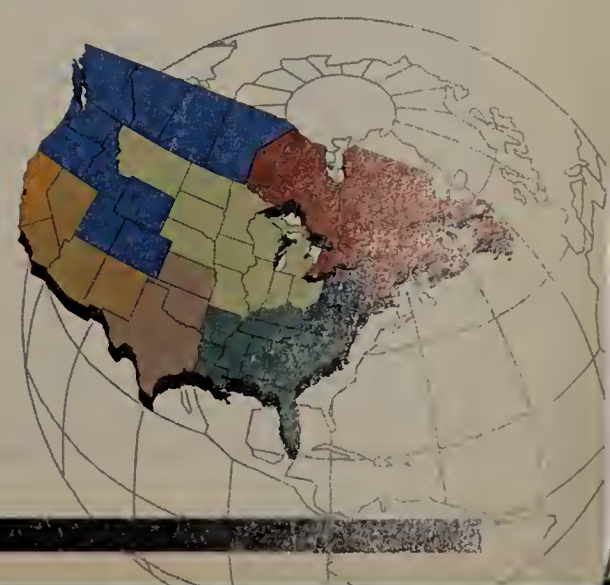


ComNet
continued from page 1

The company integrated the separate software packages within the suite and created a Web-based graphical user interface to more quickly generate reports. The interface in Version 8.5, called VantageView, works across the suite's components, enabling network managers to log on to any workstation and access, say, the Network Vantage application to check status (see graphic).

"People no longer want to have to load a fat client on a machine to get a look at how things are doing," Ehr says of the package, which starts at $19,000.

Compuware also says the upgraded package is more scalable, requiring one-tenth the number of agents.

Separately, BMC will introduce a product that combines fault and performance management collection with network discovery and network traffic flow information.

The company says its Patrol Visualis Fault Manager can correlate network device status, for example, with application response time. Patrol agents reside on servers, databases and network devices. A centralized management console now can accept information from several sources and includes a correlation engine to show how events across a network affect application performance.

"By allowing data to be shared by management applications, including, I hate to say, competitors' apps, the software will take events from anywhere and help the network folks trying to get a handle on poor-performing applications," says Gerry Roy, a product manager for the new software, which starts at $40,000.

NetScout this week will introduce its nGenius Gigabit Ethernet over Copper Probes, devices that connect to switches and report on the traffic traveling through LAN and WAN links. And now, nGenius software can generate reports on bandwidth use, throughput and application response times across several links in one Web-based view. The probes come in two-, four- or eight-port configurations and start at about $22,000.

Start-up Ipsum is introducing gear designed to help companies fix or anticipate application problems by gathering data at the IP layer as opposed to the physical links and device states on which other management tools rely.

It does this by monitoring and recording what routers say to each other and setting off alarms when performance dips below set levels.

The company is introducing two devices: IP Listeners and the Multi-area Path Appliance. IP Listeners are probes that gather the routing data, and the appliance stores the data and make it available for console display.

Users can mine the data to review router state changes during a particular period to help nail down the cause of known outages, says Dave Sullivan, systems engineer at Bloomington Hospital in Indiana.

If a T-1 line between two sites fails for an hour overnight, Sullivan says he will get notification that the outage occurred from the hospital's Spectrum management platform — but that does not tell whether the T-1 or one of the WAN routers was the problem.

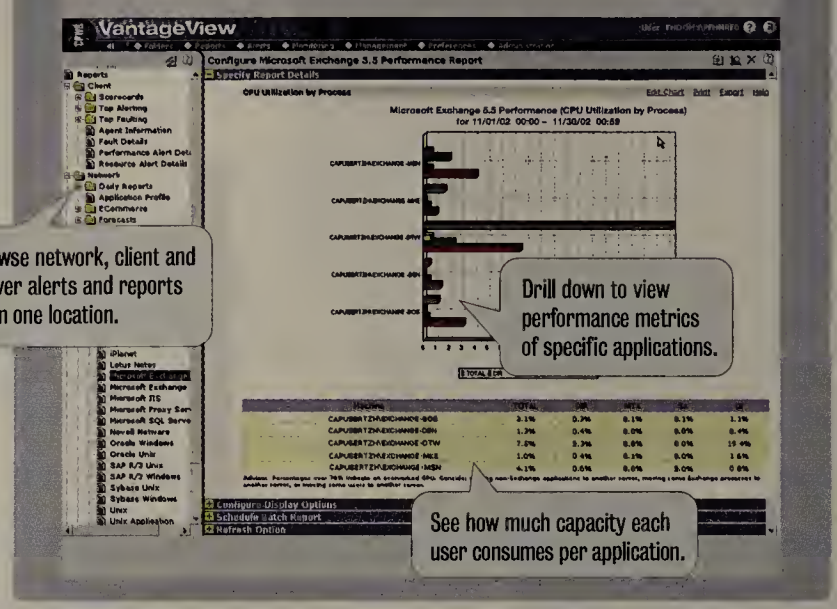
"It fills in the gaps where we weren't able to look before. Spectrum shows us the physical layer, but this shows the logical layer," says Katherine Stroud, manager of network and systems technology at the hospital.

The only vendor that comes close to providing this type of management tool is Cisco with its NetFlow feature on its routers, but that limits its usefulness to an all-Cisco network, says Jeff Nudler, a senior analyst with Enterprise Management Associates. "Ipsum has real-time visibility that is not available via SNMP," he says..

An Ipsum appliance and one probe cost $50,000 and will support monitoring of a single routed area in a network, or about 60 to 100 routers. The devices are expected to ship in April. ■

Watching from the Web

Compuware's VantageView software lets network managers see multiple network elements from one console.



Cut-rate DSL on the way?

While much of this week's ComNet Conference & Expo will focus on products and services aimed directly at corporate networks, a company looking to help carriers slash the cost of delivering broadband services by about 75% will make one of the more intriguing introductions.

Celite Systems, an 18-month-old start-up with $16 million in funding, will debut gear that lets phone carriers preprovision broadband Internet access for entire neighborhoods, only requiring customers who want service to then buy and plug in a Celite modem.

The company says it can cut the per-customer deployment cost from $275 for DSL to as low as $69 in areas where 40% of customers sign up for the service — savings providers could pass on to customers.

Designed to deliver DSL-like services over regular phone lines, Celite's gear employs multicast Ethernet over a proprietary technology called VDSL+ to reach customer sites. Because hundreds of subscribers can share the bandwidth, the actual bandwidth each gets varies. But on average, it should rival the 386K bit/sec DSL residential service carriers offer now and shared-bandwidth cable-modem services, says Roger Dorf CEO and president.

Also at the show, Foundry Networks will announce a dual-port 10G Ethernet blade and entry-level Layer 2 workgroup switches.

The module fits in Foundry's FastIron, BigIron and NetIron switches, and the two ports can be logically bundled to create a 20G bit/sec pipe. The module also can be fitted with two different optical transceivers, one with a reach up to about 12.5 miles, the other to around 25 miles. Both transceivers support single-mode fiber, Layer 2 and Layer 3 switching, and Foundry's Metro Ring Protocol for fiber-ring topologies. The ring option would be an alternative to SONET.

The blade costs $100,000 to $140,000 depending on the range it supports.

The company also is announcing its EdgeIron 240CF and 480CF wiring closet switches, which have 24 and 48 10/100M bit/sec Ethernet ports, respectively. These devices include two Gigabit Ethernet ports for copper uplinks and two mini-Gigabit Interface Converter ports for fiber uplinks.

Both boxes support the mapping of type of service and Differentiated Services priority tags to 802.1p traffic prioritization tags to preserve quality of service between Layer 3 and Layer 2.

The 2402CF costs $2,200 and the 480CF costs $4,200.

Adtran will introduce another in its line of low-cost routers that it pits directly against Cisco gear. The NetVanta 3305 access router enables businesses to support larger central sites than its earlier 3200 and 3205 boxes, which each supported only one T-1 line.

The 3305 is designed to compete against the Cisco 1700 routers and lower-end 2600 routers, and even comes with a Cisco-like command-line interface.

The chassis costs $1,300 and has two slots that can hold T-1, V.35, and dial cards that range in price from $250 to $400.

— Phil Hochmuth and Tim Greene

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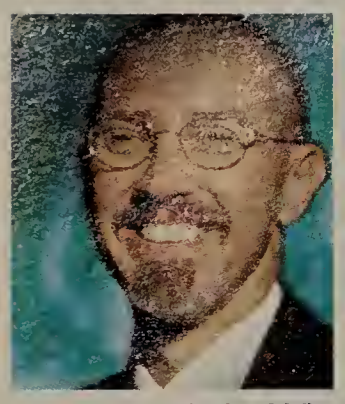

Making computers easier

At my son's school they have a computer lab. Actually what they have is better described as a computer museum. It boasts 14 aging Macs covering three models that sport five different and creakingly old flavors of operating system.

The lab has reached a point where something has to be done. After each class the poor teacher has to run around like a maniac and reset each machine so it is usable for the next class.

So a group of us parents got together and raised enough money to re-equip the lab with 14 new P4-based PCs running Windows XP Pro and a new server running Windows 2000 Server. We should be getting things set up in the next few weeks.

Hold on! I can hear a group of you beginning to howl: "Replace Macs! You're mad! Macs are the perfect platforms for schools. They're more reliable, blah, blah, blah."

Yeah, right. And who'll do the maintenance on the Macs? We had a service company giving us a few hours a week at a pretty good rate but given the antiquity of the existing Macs, we were at the point where the service was hardly effective. They'd fix one problem and be faced with two more, and the budget doesn't have any fat in it to do more.

At least using Wintel systems we have parents who can provide support and maintenance and, most importantly, we got pricing on the new PCs we couldn't get on Macs.

What's interesting is the drive in schools for computer education to be given to all grades — first through ninth. I contend that until you can read and write, you shouldn't be touching a PC (which could exclude a few adults, I know, but that's a separate issue).

Let's face it: Computers are not easy to learn whether you're a child or an adult. How often have you seen an employee of your company struggle to use the latest version of some tool? I'll bet you have often watched in surprise and then with growing frustration as users thrash around trying come to grips with a new application. Finally — resisting the desire to whack the employee around the head and shout "Idiot!" — you manage to get them comfortable and functional enough so that you can escape back to your desk where you find a gazillion trouble tickets all requiring the same teaching process.

What we're suffering from is a combination of poor application design and a reliance on generalized operating system services. When you save a file under Windows and Macs you also can perform a range of file operations such as deleting and renaming.

That's great if you understand what you're doing, but many users don't and the end result is they rename a file or delete everything in a subdirectory, and then the sobbing begins.

What's needed is a different model for how the operating system and applications work. Can you imagine an operating system that would be absolutely nontechnical and where you could perform all file and system management operations intuitively?

That would, of course, require the operating system to hold your hand and keep you out of trouble — something current operating systems fail at completely. It also would require file handling, storage management and network access to be more obvious and simpler than they currently are.

The result would be that children and adults would be able to use computers more easily with fewer problems.

I'm sure someone, somewhere, is working on the problem, but I'm afraid a solution might well be a long way off. And for now I am not sure what can be done to make computers more effective tools for educating children.

I'd like to hear your thoughts about the role of computers in grade-school education.

Send your essay to backspin@gibbs.com. And I don't want to hear that the dog ate your homework.

'NetBuzz News, insights, opinions and oddities

By Paul McNamara

Broadband service a flight of fancy?

Talk about your digital divides: While access to broadband remains a pipe dream for many at any price, a privileged handful of travelers are now zipping around the 'Net from the comfort of airline seats some 30,000 feet over the Atlantic.

Two European airlines — Lufthansa and British Airways — recently began passenger trials of a high-speed, satellite-based Internet service called Connexion by Boeing on single Frankfurt-to-Washington and London-to-New York flights, respectively. Laptop-toting reporters on the initial hops filed generally positive reviews — and presumably outrageous expense reports — although there was grumbling about details such as awkwardly located Ethernet jacks and power plugs.

Connexion officials are convinced that the flying public — business travelers, in particular — will embrace this in-flight service with open wallets and that the airlines offering it will gain a competitive advantage in their cutthroat marketplace.

Neither proposition seems as certain to Buzz as, oh, say the likelihood of getting a crappy meal in coach. But you've still got to appreciate the gee-whiz appeal of having a broadband connection while in a holding pattern over Dulles in a jetliner that isn't carrying the presidential seal. Connexion receives data at about 3M bit/sec and spits it earthward at 128K bit/sec, according to Connexion. The company promises an upgrade next year that will bump those speeds to 20M and 1M bit/sec.

So what about the U.S. airlines? Aren't they interested?

"Well, they were prior to Sept. 11," says Terrance Scott, a spokesman for Connexion. "The [U.S.] airlines are focused on financial stability and staying in business right now."

However, Connexion is continuing talks with American, Delta and United that Scott believes eventually will bear fruit.

"We're very optimistic," he says. "With the American airlines it's not a question of if, it's a question of when. We firmly believe that there is real strong passenger interest."

Of course, interest is the easy part. Who wouldn't be interested in a fast track to the Internet as a means to make business travel days more productive or merely to deaden the misery that has become commercial air travel?

However, getting passengers to part with cash that isn't coming out of a corporate expense account might prove problematic, and, given the economy, even those expense accounts might not be as ripe as Connexion envisions. The airlines still are trying to determine what price is most likely to be palatable, Scott says, but the one being bandied about so far — $30 a flight — sounds steep.

However, Connexion already seems to have buried another possible bone of contention: The fact that there is lots of stuff on the Internet that might not be suitable for showing in the tight confines of a commercial airliner. Who's going to decide what flies and what doesn't?

"That's a very good subject, and it was a real point of discussion with the airlines that we're working with because, you know, what's offensive to one may not be offensive to others," Scott says. "Nudity is not an issue in many parts of Europe, but in other parts of the world it can be deemed offensive. . . . We provide standard commercial-type filtering applications that an airline can have tailored to meet their specific requirements."

Have the airlines indicated an interest in actually deploying such filtering?

"Yes," Scott says. "They're very concerned with presenting a positive passenger experience . . . . You don't want your kid seeing stuff like that."

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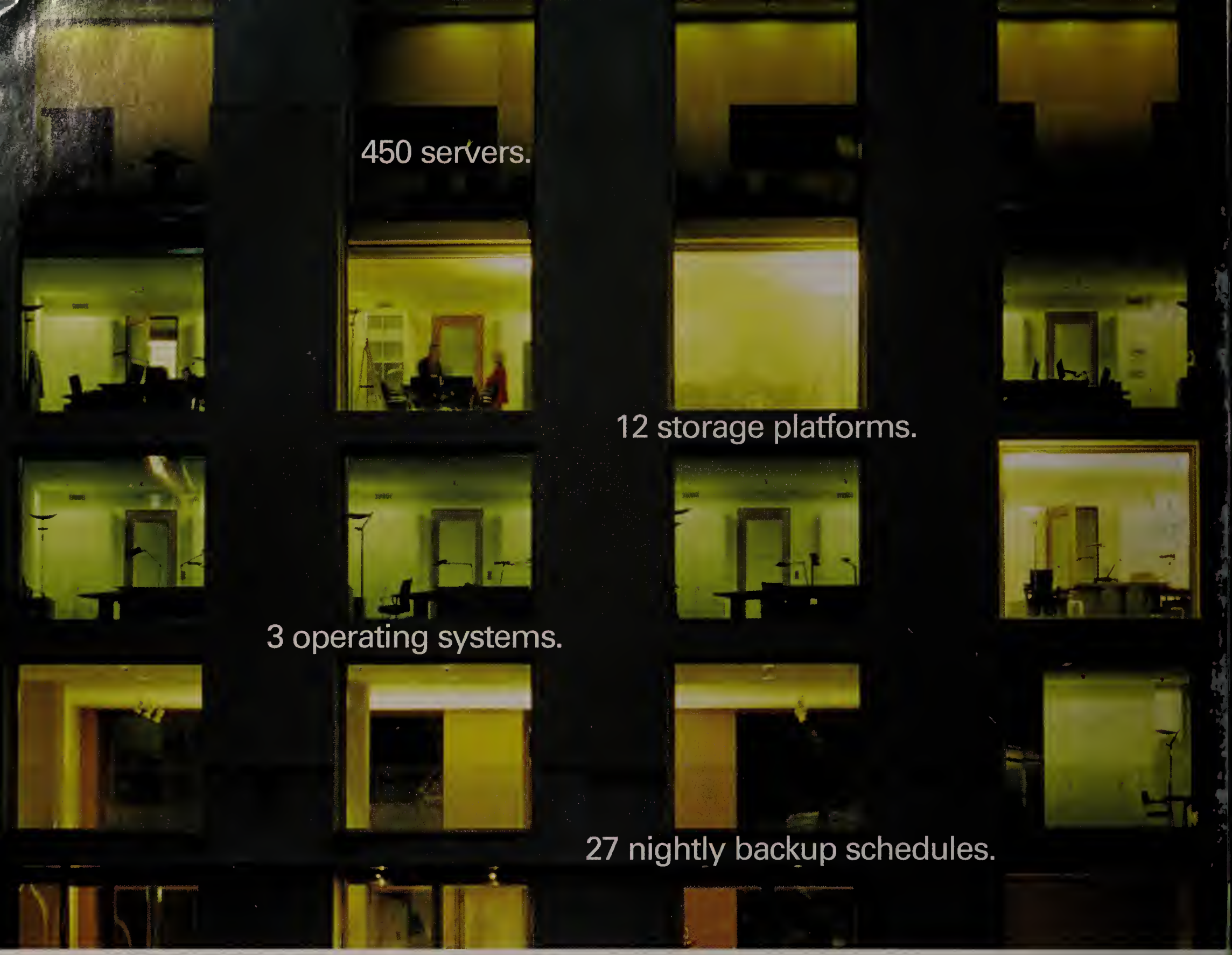

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